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Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— PAGE.

"Syphilis in Children, with Special Reference to the Efficiency of Bismuth for Treatment," by ROBERT SOUTHBY, M.D., B.S. 357

"Some Medical Aspects of the Settlement at the River Derwent (1803-1805)," by WILLIAM L. CROWTHER, D.S.O., M.B., B.S. 370

REPORTS OF CASES—

"Wandering Endometrioma," by REGINALD DAVIES, O.B.E., M.B., Ch.M., F.R.C.S.E. 373

"Amœbic Dysentery Acquired in North Queensland," by A. H. BALDWIN, M.B., B.S., D.P.H., D.T.M. & H.; G. M. HEYDON, M.B., D.P.H., D.T.M. & H.; and J. A. BROBEN, B.A., M.B., B.S. 374

REVIEWS—

Diseases of Childhood 375
Elementary Therapeutics 375
Mental Diseases 375
Cardiac Disease 376
Electrothermy 376

LEADING ARTICLES—

The Exordium 377

CURRENT COMMENT— PAGE.

Pneumonic Plague 378
The Harmsworth Memorial Research Fund .. 379

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Surgery 380

MEDICAL SOCIETIES—

The Melbourne Pædiatric Society 382
The Melbourne Hospital Clinical Society 384

MACDONALD PRESENTATION FUND 387

OBITUARY—

Leslie John Scott 387

CORRESPONDENCE—

Leprosy 387

MEDICAL APPOINTMENTS VACANT, ETC. 390

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 390

DIARY FOR THE MONTH 390

EDITORIAL NOTICES 390

SYPHILIS IN CHILDREN, WITH SPECIAL REFERENCE TO THE EFFICIENCY OF BISMUTH FOR TREATMENT.[1]

By ROBERT SOUTHBY, M.D., B.S. (Melbourne),

Honorary Medical Officer to Venereal Diseases Clinic; Honorary Clinical Assistant to Surgical Out-Patients, Children's Hospital, Melbourne.

THE subject of syphilis in children has always been one of extreme interest from numerous points of view and it may be conveniently considered under the following headings: (i.) Classification, (ii.) mode of infection, (iii.) symptomatology and clinical manifestations, (iv.) family history, (v.) diagnosis, (vi.) treatment, (vii.) after results.

The observations made in this paper are the results of experience gained during the treatment of children referred to the Venereal Diseases Clinic at the Children's Hospital, Melbourne, during the past two years.

Classification.

Syphilis in children, as manifested in the patients referred to this clinic, may be classified as follows:

(*a*) Congenital syphilis.
  (1) Early or florid type.
  (2) Latent type, becoming evident only some years after birth or about the age of puberty.
  (3) Unsuspected and discovered only by routine Wassermann testing.
(*b*) Acquired syphilis.

This classification is in accord with the mode of infection, the clinical manifestations and symptomatology and with the family history as will be seen in the subsequent paragraphs.

Mode of Infection.

Syphilis in children may be either congenital or acquired. The great majority of the patients seen in this clinic have inherited the disease from one or both parents. When an infant is presented with definite clinical signs of congenital syphilis, it has been found almost invariably that the serum of the mother also reacts strongly to the Wassermann test. Thus it seems only reasonable to conclude that the infant has been infected from the mother during gestation.

This simply bears out the teaching of the late Sir Harry Allen[(1)] who stated that "inherited

[1] Read at a meeting of the Melbourne Pædiatric Society on October 13, 1926.

syphilis of the child implies syphilis of the mother as a necessity." How often the mother has in turn been infected by the father is a matter which will always be extremely difficult to determine.

The mothers are always encountered much more frequently than the fathers, for it is usually the former who bring the children to hospital, and when the condition of the child has been definitely diagnosed and explained to the mother, she almost without exception submits willingly to a Wassermann test of her own serum. But with the fathers it is much more difficult. In the first place they rarely attend at hospital with the children and even when they do appear, they are much more reticent about having a "blood test" than are their wives. In the great majority of cases when they do not attend and the state of affairs is explained to them only by the mothers or through the medium of the leaflets supplied by the Public Health Department, it is a comparatively small proportion who will then either attend the hospital or go elsewhere to have their serum tested. Herein lies one of the greatest defects in the *Venereal Diseases Act* as at present constituted, for there is no provision for compelling the parents of a known congenital syphilitic child to submit to a Wassermann test of their own serum. This provides one of the greatest difficulties with which we have to contend, for of what avail are our efforts in placing the mother under treatment and warning her against any further pregnancies, until the blood fails to yield a response to the Wassermann test, if the father who is often the primary source of the infection, is allowed to go free and reinfect his wife as soon as she has completed her course of treatment.

In this respect I may be allowed to draw attention to the advisability of treating the mothers and the children at the same clinic. Such an arrangement would save an enormous amount of time, money and anxiety to these unfortunate women and would without a doubt be greatly appreciated by them, if it were at all practicable. They are almost invariably willing to undergo treatment and they persevere in it against numerous difficulties and disappointments with a keenness which merits all the encouragement we can give them.

Fortunately, at the present time there is an admirable arrangement of the clinics at the Women's and the Children's Hospitals, Melbourne, whereby the mothers attend the former in the morning for their own injections and then go on to the latter, only a few minutes' walk, for the treatment of the children in an afternoon clinic. Even this arrangement usually necessitates the loss of a whole day each week for many of these people, as they often have a considerable distance to travel to and from the hospital. Nevertheless it is the best means available at the present time and, unless some arrangement can be made whereby both the children and their mothers can be treated in the one clinic, the prevailing method must continue.

Occasionally children acquire syphilis, although this mode of infection is very much less common than is the congenital type of the disease.

The infection may be due simply to contact with an infective lesion in an adult or infected articles of clothing or utensils, as has been found occasionally in the present series. Further it may be contracted during criminal assault, as has been observed in several of the children who have suffered from a gonococcal vulvovaginitis through interference in this way and who have subsequently been found to be suffering from syphilis also.

Symptomatology and Clinical Manifestations.

The symptomatology and clinical manifestations will perhaps be indicated best by quoting the clinical histories of several typical cases in each group.

The following are examples of congenital syphilis of the early or florid type:

CASE No. III., L.L., a female, aged nine weeks, was a full-time child, "a healthy baby born." Snuffles at the age of four weeks were followed by desquamation of the palms and soles. Excoriation of the angles of the mouth and anal region occurred. The hair was suggestive of the so-called "Hutchinson mop." The spleen was slightly enlarged. The response to the Wassermann test was "+++." The mother and elder sister both gave the same "+++" response to the Wassermann test.

CASE No. VI., R.G., a female, aged five months, suffered from snuffles and generalized rash at the age of six weeks. The palms and soles then began to peel. The liver and spleen were both grossly enlarged. The nasal bridge was depressed and purulent nasal discharge was present. The response to the Wassermann test was "+++." The mother had had three pregnancies. The first had resulted in a miscarriage at seven weeks. The second had resulted in a still-birth; movements ceased at seven months and a macerated child was born six weeks later. The patient was born as a result of the third pregnancy. The mother's serum yielded a "+++" response to the Wassermann test.

CASE No. VIII., G.B., a male, aged five weeks, had a papular rash over the trunk, limbs, buttocks face, palms and soles. The liver was enlarged and the spleen was not palpable. The scalp veins were dilated, cracks were present at the angles of the mouth and he had snuffles. He was a hydrocephalic child. His response to the Wassermann test was "+++." The mother died of cerebral syphilis, her response to the Wassermann test being "+++" also.

CASE No. XIV., L.S., a female, aged three months, suffered from ulceration at the angles of the mouth and in the vulval and anal regions, snuffles and dilated scalp veins. Spirochætes were demonstrated in a scraping from the ulcer in the anal region. The response of the patient and her mother to the Wassermann test was "+++."

CASE No. XLI., R.N., a male, aged nine weeks, was an illegitimate child and the result of the mother's only pregnancy. Swelling of the lower extremities of both radii and ulnæ (right side greater than the left) became evident at the age of five weeks. He was subsequently disinclined to use the arms. X ray examination revealed much swelling of the lower ends of the right radius and ulna and some disintegration of the lower ends of bones of the left forearm—syphilitic osteochondritis. The response of both the patient and his mother to the Wassermann test was "+++."

CASE No. XLIII., E.W., a male, aged three months, had a palpable spleen, dilated scalp veins and ulceration of the dorsum of the tongue. He had a "punched out" ulcer on the buttock close to the anal margin. His response to the Wassermann test was "+++." The mother had had three pregnancies. The first child died at the age of seven weeks of "gastritis." The second child died of "gastritis" at the age of eight months. The third child was the patient. The response of the mother's serum to the Wassermann test was "+++."

The following are examples of the latent type, becoming evident only some years after birth or about the age of puberty:

CASE No. XVII., L.W., a male, aged eleven and a half years, had no apparent signs in infancy and early childhood. He first attended for a foul perforating ulcer of the palate and interstitial keratitis. His response to the Wassermann test was "+++."

CASE No. XXIII., R.W., a male, aged twelve years, was well until the age of twelve years, when he attended on account of sore throats and enlarged cervical glands. He suffered from gradually progressing deafness. He had a typical facies, "screwdriver" teeth and also ulceration at the angles of the mouth. His response to the Wassermann test was "+++."

CASE No. XLV., W.T., a male, aged eleven years, had a painful swelling of both knees without any history of trauma. He had a similar swelling of the left elbow and interstitial keratitis. His response to the Wassermann test was "+++." No signs or symptoms were present in early childhood.

CASE No. XLVIII., R.L., a male, aged ten years, had a firm, tender swelling over the shaft of the left tibia and this was said to have been first noticed after a fall six weeks previously. Pigmented scars were present on the arms and legs. The epitrochlear glands were enlarged. The response of the serum to the Wassermann test was "+++." X ray examination revealed extensive periostitis of the tibia.

The following are examples of unsuspected congenital syphilis discovered only by routine Wassermann testing:

CASE No. XXIV., G.L., a female, aged eighteen months, had no symptoms during early infancy and no stigmata were obvious on examination. Her serum was tested because a younger sister was a typical congenital syphilitic baby. The response of her serum and that of the mother to the Wassermann test was "+++."

CASE No. XXVII., J.M., a male, aged two years and seven months, was apparently healthy except for frequent colds. His infection was discovered through the attendance of a younger sister who was a typical congenital syphilitic. The response of his serum and that of his mother to the Wassermann test was "+++."

CASE No. XXIX., C.S., a male, aged twenty-one months, was apparently a healthy child. His syphilitic infection was discovered only by routine use of the Wassermann test, because his elder sister was under treatment. The response of his serum and that of his mother to the Wassermann test was "+++."

CASE No. XXXV., J.W., a male, aged seven and a half years, suffered from frequent colds and chronic bronchitis. Apparently he had no stigmata at any time. The response of his serum to the Wassermann test was "+++." Three others in the family died in early infancy. The mother and father were both alcoholic and living apart. The mother's serum yielded a "+++" response to the Wassermann test.

CASE No. LI., F.S., a male, aged three years and four months, was apparently a healthy child. His serum was tested because a younger brother attended with a characteristic lesion. His serum and that of his mother yielded a "+++" response to the Wassermann test.

The following are examples of the acquired form of syphilis:

CASE No. XXXVI., E.A., a female, aged four years and ten months, had a flat, firm superficial sore on the left side of the vulva and broad condylomata of the anal region. She was healthy as an infant. Her response to the Wassermann test was "+++." The mother, father and three other children all failed to yield a reaction.

CASE No. XXXVIII., N.H., a female, aged eight years, was under treatment for gonococcal vaginitis in April, 1925; at that time she yielded no reaction to the Wassermann test. In September, 1925, a macular eruption appeared on the chest and limbs, the hair began to fall out, mucous patches were seen on the soft palate and epitrochlear glands were enlarged. She now admits criminal assault by a male relative who is under treatment for gonorrhœa and syphilis. Her response to the Wassermann test is "+++." She is an only child. Her mother's serum does not yield a reaction to the Wassermann test.

CASE No. XXXIX., H.B., a male, aged ten years and seven months, suffered from swelling of the left knee following a slight injury regarded clinically as tuberculous and treated as such. The response to the Wassermann test was found to be "+++" and interstitial keratitis then appeared. He had frequently come into contact with an old man who is a syphilitic and had a chronic discharging gummatous ulcer of the forearm for some years. The serum of mother and two brothers failed to yield a reaction to the Wassermann test.

CASE No. XL., M.W., a female, aged ten years, suffered from gonococcal vaginitis following criminal assault. No clinical signs of syphilis were present, but a Wassermann test yielded a "+++" response. The serum of the mother and of the only brother both failed to yield a reaction.

Family History.

Inquiry into details concerning the family history reveals a quantity of extremely interesting information on the hereditary transmission of disease, in addition to numerous appalling sidelights on the conditions under which many of these people live and under which their children endeavour to exist in spite of the heavy handicap of their early life.

The most characteristic story of a typical syphilitic family is one in which there is a definite history of infection in the husband followed either by inefficient treatment or none at all, subsequent to the marriage there is rarely anything noticed to suggest contraction of infection by the wife. Then the first pregnancy may result in an early miscarriage (during the first few months), the next a later miscarriage, then a full-time child is still-born and finally a typical congenital syphilitic baby is born.

A husband, a returned soldier, contracted syphilis when abroad and had several injections at the time, but no blood test subsequent to treatment. His wife has always enjoyed good health. She has had four pregnancies. The first resulted in a miscarriage at three months, the second in a miscarriage at five months. Then a full-time child was still-born and a baby born alive gave typical manifestations of congenital syphilis at the age of five weeks.

It would appear that either the virulence of the infection gradually wanes or that the maternal resistance slowly increases, so that the gestation is carried on further each time and ultimately a full-time baby survives. This type of history is much more characteristic of the syphilitic family than of one in which there are repeated miscarriages at about the same period of gestation on each occasion.

Other families are seen in which there is a series of children all apparently healthy at birth and showing no symptoms to attract the attention of the parents and yet one after another they are carried off in early infancy from apparently trivial causes. Then a later child survives rather longer, but shows some definite stigmata. This is seen in the following case:

A woman had four pregnancies. The first child was premature and died at the age of ten days. The second was a full-time child and died at one month of "gastritis." The third was a full-time child which died at six weeks of "enteritis." The fourth was a full-time child. Snuffles, rash and enlarged spleen appeared at the age of two months.

Such families fully amplify the oft repeated statement of the late Professor Sir Harry Allen[1] that "syphilis is the great devitaliser."

Still others have nothing to arouse any suspicion of the trouble in either parent until the first child arrives and is found to show obvious indications of congenital syphilis.

It is in eliciting these facts concerning the family histories that one meets with so many difficulties, but with the aid of a certain degree of tact and the avoidance of leading questions one can usually gain the confidence of the parent and in many instances a flood of light is thrown on the mode of infection and transmission of the disease.

Nevertheless, in spite of the greatest care, I have known of more than one home being broken up and of several serious brawls having occurred between husband and wife, when the latter has returned home after a visit to the hospital with a child which has been found to be syphilitic. The varying manner in which the diagnosis is received—utter hopelessness, resolute unbelief and a firm denial of any possibility of such infection or a determined resolve to make the best of the situation and persevere with the treatment—supplies an intensely interesting, though often sordid, study of human nature. The hope and encouragement which accompany an assurance that the baby can be cured by perseverance with intensive treatment, however, more than counteract the shock and disappointment caused by the first realization of the condition.

Diagnosis.

With many of the patients the diagnosis is obvious from the findings on clinical examination, such as the combination of snuffles, rash and enlarged spleen or the presence of a pseudoparalysis due to syphilitic osteochondritis or interstitial keratitis. In this type of case one feels that the diagnosis is beyond all doubt on the clinical findings alone and the serological test simply serves as confirmation of this opinion and a criterion for notification of cases of the disease. In others, however, the ultimate diagnosis depends on the result of the Wassermann test applied to the serum and no case has been included in this series in which the serum has not given a definite reaction to this test. It must be borne in mind, however, that young babies showing various stigmata may give no reaction even up to the age of three months, but after this age the serum reaction is usually quite reliable.

Certainly it is only a small proportion of young babies which is found to take this time to develope a definite power to respond to the Wassermann test and, if there are no obvious signs, it is advisable to postpone any treatment until a confirmatory test is performed at the age of three months or later, but if there are obvious signs associated with absence of reaction in a young baby, treatment should be commenced without delay. Certainly does this apply if the serum of the mother gives a definite reaction, as such information will always clinch a doubtful diagnosis in these young infants.

According to Fordyce and Rosen:[2]

> Attenuation of the virus by treatment of the pregnant mother always modifies the infection and may delay clinical signs for months or years. A persistent negative Wassermann reaction in the child is the surest criterion of cure. Negative clinical and serological findings at birth are not always indicative of the absence of syphilis. It is advised that routine examinations be made at intervals up to two years. Microscopic examination of the placenta may prove of greater value in determining a latent infection than the result of the Wassermann reaction on the blood from the umbilical cord or from the veins during the early months of life. Occasionally cases of active syphilis with a negative serology are seen. Clinical manifestations must always take precedence over laboratory findings.

The discovery of those children who present no signs or symptoms to arouse suspicion and whose condition is diagnosed only by routine testing of the family tends to make one an advocate of what is at present an impossible ideal, namely, the routine testing of every child who attends the hospital. In further support of such a procedure I may be permitted to quote an illustrative case:

> CASE No. LX., L.Y., a female, aged ten and a half years, had attended three hospitals for various minor complaints since infancy and had twice been operated on for intussusception. There had apparently been no suggestion of any syphilitic infection at any time until she reported at the age of ten and a half years with interstitial keratitis. A Wassermann test was made and the response was "+++"; the mother's serum reacted in a similar manner.

Naturally one felt rather humiliated when the mother indignantly asked why such an investigation had never been carried out in all the ten years she had been attending hospitals. Such an unfortunate incident would certainly have been avoided and the child spared from the eye condition, if a routine Wassermann test had been performed during the early attendances.

With babies in the early stages of florid congenital syphilis and showing superficial ulceration at the muco-cutaneous junctions it is often possible to demonstrate spirochætes in a scraping from the eroded surface spread as a film on a glass slide and stained by the Fontana or Levaditi method (see notes of Case No. XIV., L.S., and the summary of clinical histories). Such a finding is also diagnostic and in every patient in whom spirochætes have been found in this manner, the serum also has given a strong reaction to the Wassermann test.

Treatment.

The treatment of syphilis has passed through several phases during recent years, as shown in a review by Milian and Brodier.[50][52]

The first great advance on the use of mercurials was the introduction of the arsenical preparations and these were gradually improved with each new derivative. More recently it has been shown that arsenic alone can be relied upon absolutely for the treatment of the disease. This has been fully confirmed by the work of Leonard Findlay,[3] of Glasgow, and H. Boyd Graham,[4][5] of Melbourne.

Graham had used "Novarsenobillon" alone on an extensive scale at the Children's Hospital, Melbourne, during the period 1920-1923, and found it most effective in curing the disease both as regards

improvement of the clinical manifestations and also as controlled by the serological findings. These good results were also shown to be sustained as evidenced by the continued failure of the serum to react and by the good health enjoyed by the patients when examined on subsequent occasions.

The most recent phase has been the use of bismuth as an antisyphilitic remedy. This metal has been freely advocated by authorities in all parts of the world during the last few years. As early as 1889 Balzer[6] had suggested that the salts of bismuth would be valuable for the treatment of syphilis, but the proposal was rejected on account of the severe toxic effects of the preparation used (the ammonio-citrate) when injected into dogs. Nothing further was recorded until 1916, when Sauton and Robert[7] showed that the tartrobismuthate of sodium and potassium was both preventive and curative for spirillosis in fowls, as well as for trypanosomiasis. In view of these findings, they conjectured that it would be of use in the treatment of recurrent fever and syphilis. Sazerac and Levaditi[8][9][10][11] next showed that this hypothesis was well founded for animal syphilis and shortly afterwards Fournier and Guenot[12] confirmed these experimental findings for human syphilis.

From this time onwards the literature has been inundated with contributions by observers in all parts of the world, but these refer chiefly to adults and very little has been written on the use of bismuth for syphilis in children. Cajal and Spierer[13] were the first to use it for congenital syphilis and they held that bismuth cicatrizes the lesions as quickly as arsenic and more quickly than mercury. They claimed that the immediate reaction is as effective as that of arsenic, but that the ultimate result is obtained more slowly judged both clinically and serologically.

The efficiency of bismuth as an antisyphilitic remedy was confirmed by Milian,[14][50] Stokes and Gardner,[15] Bruck and Weinberg[16] and several Italian observers, including Tommassi,[17] Cacioppo,[18] Ascoli and Giorgio.[49] Chenroy[19] found that bismuth was at least as successful as arsenic if not more so and with the advantage that it is easily administered and not at all dangerous. Phillipson[51] has compared the therapeutic effects of bismuth and mercury.

It has been shown in *The Lancet*[20] that in the course of its administration bismuth becomes widely disseminated throughout the tissues and chemical analysis has indicated its presence in the blood, cerebro-spinal fluid and almost all the organs, particularly the liver, salivary glands, spleen and heart. It has also been detected in the bile, urine, saliva, sweat and fæces, in all of which it is rapidly eliminated. Christiansen, Hevesy and Lomholt[21] consider that it is eliminated chiefly by the kidneys. Levaditi[22] believes that when used early and in sufficient quantity bismuth will cure syphilis and that the absence of recurrences and the effect on the reaction to the Wassermann test serve only to confirm this opinion.

Bismuth preparations have been supplied in various forms, for example, aqueous solutions, oily suspensions and solutions and also in the so-called "colloidal form." As a result of experimental work on rats, Myers and Corbit[23][24] have proved that soluble preparations are absorbed more rapidly and are more toxic than insoluble ones when injected intramuscularly. There was a destructive action on the kidneys and liver, some discoloration of the lower intestinal tract due to a deposition of bismuth which had been excreted through the bile and extreme emaciation in the animals under experiment. According to Milian[14] the ultimate effect depends on the amount of the metal administered and not so much on the form in which it is given.

With regard to the particular form of bismuth and the route by which it should be administered there has been considerable difference of opinion. Grenet[25] favoured an intramuscular injection of a soluble preparation as the safest, for if toxic symptoms occur, they can quickly be arrested by discontinuing the injections. But if an intramuscular depôt of an insoluble preparation has been created and toxic symptoms supervene, it is practically impossible to remove the depôt. On the other hand such a depôt provides a more continuous and prolonged action of the drug, the injection of which need not be too often repeated.

Lomholt [26] recommended a solution of bismuth hydroxide recently prepared in glycerin and distilled water, but Levaditi[27] and also Lafay and Ferrand[28] favour an oily suspension on account of its gradual absorption and consequent less strain on the kidneys. Klauder[29] considered that the intravenous route was positively contraindicated since the drug is very toxic when injected in this manner in rabbits. Gougeret[30] says that complications and accidents following intramuscular injections may be as severe as those following intravenous injections. He further states that serious symptoms and even death have been caused by embolism following the intramuscular injections of oily suspensions of antisyphilitic drugs.

Author's Series.

The second portion of this paper represents the results of an investigation carried out with the object of demonstrating whether or not bismuth used alone is effective in the treatment of syphilis in children and it was with the knowledge that arsenical preparations were always available if bismuth was found inadequate, that this investigation was commenced by the author on taking charge of the clinic from Dr. Graham in February, 1924. For the purpose of this research, "Bismol," an oily suspension of bismuth hydroxide containing 0·15 gramme of the latter in two cubic centimetres of oil was used throughout.

Although knowing that arsenic could be relied upon as absolutely effective, I constantly met with patients in whom a severe local reaction occurred at the site of the injection, particularly in the smaller children in whom it is often impossible to give intravenous injections and I had in consequence to rely on the deep subcutaneous or intramuscular routes. Admittedly, it was only a small proportion of the total number of injections that caused

trouble, but nevertheless they were sufficiently frequent to discourage some of the mothers from persevering with the treatment and also to frighten the children so much as to make them object very strongly to any further injections.

The reactions usually took the form of a small chemical abscess containing sterile liquid and necrotic tissue which either subsided after several aspirations or ulcerated and produced an indolent leathery slough which took weeks to separate and was often followed by a chronic discharging sinus which persisted for months. At other times a localized tender and indurated area was produced and this formed a firm fibrous mass that often persisted for years.

The bismuth preparations have been advocated as much less irritating than the arsenicals. This has been shown by Define,[31][32] Hopkins[33] and many others.

This was another reason for using exclusively the preparation above described, since an injection which will cause the minimum of discomfort and local reaction and at the same time be efficient in its results, is the ideal one for use in a clinic consisting of children who must of necessity attend regularly for treatment over long periods.

The children treated were referred from the wards and out-patient clinics, both medical and surgical, and the special departments either on clinical grounds or as the result of a preliminary Wassermann test applied to the serum.

Before treatment was commenced, the serum was always tested and, if clinically syphilitic, the child was given the first injection on the same day immediately after the blood had been collected for the laboratory. If, however, there were no obvious stigmata, treatment was not commenced until the result of the serological test was obtained.

At this juncture I may be permitted to say a few words with regard to the collection of the blood specimens for the laboratory. In young infants, before the anterior fontanelle has closed, blood may be collected with ease in a small "Record" syringe by inserting the needle directly backwards and downwards at the posterior angle of the fontanelle; immediately the needle enters the longitudinal sinus the blood wells up into the syringe and the pressure is usually sufficient to force the piston up until the barrel is filled. This is an admirable method for in-patients where one can always obtain sufficient assistance to hold the infant's head securely and prepare the scalp efficiently, but it is not a suitable method for use in a large out-patient department where time is an all important factor and the baby is taken home shortly afterwards.

Another word of warning is necessary in regard to puncture of the longitudinal sinus, namely, it should never be performed in a jaundiced infant. I have seen one baby who was deeply icteric and who had a small quantity of blood withdrawn from the fontanelle. The child subsequently commenced to twitch down one side of the body and gradually became comatose and died within a few hours. The autopsy revealed a large intracranial hæmorrhage which had tracked downwards over the motor area of the cortex and formed a considerable clot at the base of the brain.

The usual method employed with children in this clinic is to stab either the thumb or the heel with a sharp tenotome. The heel is used for infants and the thumb for older children. The part is simply well cleaned with spirit and then mopped quite dry and the tenotome after being allowed to soak in pure "Lysol" is rinsed in sterile water and also wiped dry before use. This is a small matter the importance of which it is very difficult to impress upon students and nurses in the collection of blood for serological work. They repeatedly allow the part to remain a little moist with water or spirit which, of course, lakes the blood and spoils the serum for the laboratory.

When the part, thumb or heel, is prepared, one deep stab is made with the dried tenotome on the lateral or medial aspect, that is, away from the mid-line and sufficient pressure is made with the other hand to cause venous congestion of the part. This method never fails to supply sufficient blood for the test. A small iodine dressing is applied to the part after the blood is collected. If the tubes are corked and immediately inverted and allowed to remain in that position until the blood has coagulated, the clot usually adheres to the cork and can easily be removed with it, leaving the almost clear serum which is easily centrifuged and is then ready for the serologist.

In every instance in which a child was proved to be syphilitic, the serum of the mother was also tested and almost without exception in the congenital cases it reacted strongly to the complement deviation test.

This I consider to be a most important point in connexion with preventive treatment, as these mothers were all referred to adult clinics for the necessary treatment and subsequent records will show how a baby can often be saved by treating the mother efficiently before or during the course of her pregnancy.

Technique of Injections.

The "Bismol" was always warmed either by standing the bottle in a bowl of warm water or if the small ampoules are used, these can be carried in the waistcoat pocket. The warming of the oil allows the bismuth hydroxide to be much more easily shaken up in suspension and to run through the needle more readily. It also renders the injection less painful. The injections were all administered intramuscularly, deeply into the gluteal muscles and were given once weekly into alternate buttocks.

The child lies in the prone position or sits on the edge of the table and the skin is well prepared with spirit and iodine. The injection is given with a "Record" syringe and a medium bore serum needle. The latter is plunged deeply into the gluteal muscles, in the upper and outer part of the buttock

in order to avoid the sciatic nerve, the child being held firmly to obviate any risks of snapping the needle.

To guard against the puncture of the numerous veins in this region the piston is slightly withdrawn before injecting the oily suspension. If blood appears in the syringe the position of the needle is altered and an accidental intravenous injection is thus prevented.

Porter and Carter[34] recommend using the triceps muscle of the arm as preferable to the glutei, claiming that there is less chance of abscess formation, but this site has not been used in the present series of children.

It was found at first that injecting the oily suspension slowly was often followed by an escape of some of the fluid along the needle track on withdrawing the needle; this difficulty was overcome by injecting the oily fluid quickly and with considerable pressure. Given in this way it appears to be diffused through the muscle rapidly and very rarely tends to escape back along the needle puncture. After the needle is withdrawn, pressure is kept on the part for a few seconds with a pledget of wool and the area massaged lightly. The puncture is then sealed with a wisp of cotton wool soaked in collodion. Children who struggled much and kept the glutei contracted during the injection, also tended to force some of the oil back after the needle much more often than those who would lie quietly with the muscles relaxed.

The usual course of injections was a series of ten at intervals of a week followed by a Wassermann test to indicate the progress under treatment. If the response remained positive, a further course was commenced immediately, followed by a third or more if necessary. No interval was given between the courses of treatment, unless the child showed some indication of bismuth intoxication.

Response to Treatment.

Throughout this series of patients it has been most gratifying to see the manner in which the disease responded to treatment, judged both by clinical observations and serological tests. Especially was this indicated in those children in whom the Wassermann reaction was measured quantitatively during their treatment. With these the number of minimum hæmolytic doses of complement fixed by the serum was seen to diminish progressively as treatment advanced until finally no reaction was obtained. This improvement can be seen in the table of summarized clinical histories.

The improvement was seen particularly in the young babies—those included in the early congenital or florid type. With these the rash, snuffles and superficial ulcers round the mouth and anus all rapidly subsided after the first few injections and the mothers frequently stated that the general condition of the child was much improved. They would take their feedings much more contentedly and gradually gained weight. These satisfactory results confirm the findings of Pasini[35] and Radaeli.[36] Spirochætes disappeared rapidly from the lesions and infants with a pseudoparalysis due to syphilitic osteochondritis were soon relieved of pain and moved their limbs freely after several injections. With the older children, those in latent and unsuspected groups, the clinical manifestations rapidly improved, for example, condylomata, perforating ulcers of the palate, laryngitis and interstitial keratitis, but it was found much more difficult to alter the response to the Wassermann test. The patients with acquired syphilis were also much more resistant to treatment and required repeated courses, but all showed an encouraging gradual response.

In general it was found that the younger the patient at the time of commencing treatment, the more readily did the lesions improve and the response to the Wassermann test disappear, whereas with the older children the response to treatment was much slower. Several of these children who had previously had extensive treatment with arsenic without very definite response, gradually improved under bismuth therapy, but others again showed no change at all in their serum reactions and appeared to be Wassermann-fast in spite of all treatment.

In all seventy-three children have been treated in this series, but some have moved to the country or to other States before their course has been completed. For these and various similar reasons others cannot be traced, but the detailed results of forty of these children are included in the accompanying summary which shows clearly the improvement in the response to the Wassermann test and the clinical manifestations during the treatment with bismuth (see Summarized Clinical Histories).

Toxic Effects.

A variety of symptoms, due to the toxic effects of bismuth absorbed during a course of treatment, have been described by numerous observers, including Gougerot.[48] The earliest indications are a foul breath and gingival blue line which forecast the appearance of stomatitis and are associated with it. The stomatitis is usually slight in degree and unaccompanied by salivation as in the case with mercury. Albuminuria or a definite nephritis may occur and occasionally general symptoms, such as malaise, chills or fever may supervene shortly after the injections. These symptoms are recorded by Klauder,[29] McCafferty[37] and many others. Juliusberg[38] did not consider the albuminuria and blue line sufficient indication for suspension of treatment and claimed that there is never any permanent renal disturbance. Severer symptoms in the form of icterus, hæmoptysis, hæmatemesis and metrorrhagia have been described by Hudelo and Rabut[39] who also mention a number of cutaneous manifestations and disturbances of the central nervous system.

A much more severe general reaction, taking the form of a rigor, bone and joint pains and a feeling of oppression about the chest ("as if held in a vise") and fever persisting for several days, has been reported by Shivers.[40] This observer also

advocates repeated X ray examinations for controlling the absorption of the bismuth. Parnell[41] has recorded a similar severe upset in one of his patients.

Betz[42] found definite changes in the blood picture consisting of a fall in the hæmoglobin content and in the number of red cells and a decided increase in the eosinophiles.

With reference to the use of bismuth in congenital syphilis Bentivoglio[43] and Aleixo[44] claim that it is well tolerated and that albuminuria and stomatitis do not occur. Galliot[45] concludes that the results when using bismuth in children are equally as good as arsenic, but not so rapid.

In general the ill effects of injections in this series of patients have happily been conspicuous by their absence.

Immediate Reactions.

Two children have reported that they vomited occasionally and had a feeling of malaise after the injections, but that this passed off within twenty-four hours. It is questionable whether this was due to the bismuth itself or simply a nervous indisposition as the result of the actual insertion of the needle. Several of the smaller children suffered from a relaxation of the anal sphincter immediately the injection was made; this again was probably due merely to the mechanical stimulus. A number of the older children complained of a certain amount of discomfort in the site of the injection, but this had generally subsided by the time they had reached their own homes and caused no further trouble. Only one child complained on one occasion of symptoms resembling the nitritoid crises which have been reported by Simon[46] and others.

Local Reactions.

In the great majority of cases local reactions were absolutely negligible. Only four children showed a slight thickening at the site of the injections which subsided in a few weeks. There was no acute reaction with tender, brawny, indurated areas such as were encountered with other more irritant drugs. One child alone—a girl, aged thirteen years—had a localized abscess and this occurred after two injections, one in each buttock, and was followed by a sinus which discharged for some months before healing completely. Similar local reactions have been recorded by de Bella.[47]

In all I have personally administered 1,034 injections comprising a total of 2,488 cubic centimetres of the oily suspension and the very small proportion of cases in which there was any reaction at all, is sufficient tribute to the non-irritating character of this particular preparation. Several of these children have had a large number of injections, for example, in Case No. XVII. 48 injections were given, in Case No. XXIII. 46 injections were given, in Case No. XXXI. 30 injections were given and in Case No. LX. 26 injections were given without any untoward local effects whatever. Further, several of the small babies have each had twenty injections unaccompanied by any local ill effects.

Later General Reactions.

Later general reactions became evident only in children who had had either a very intensive course of treatment or a large number of injections over a prolonged period. The first indication of any intoxication from the absorption of bismuth is shown by the presence of a small amount of albumin in the urine and also some granular or hyalo-granular casts as seen by microscopical examination. If the absorption has been of longer standing, a definite blue line appears on the gums at the junction of the gum with the teeth. This is more evident as a rule on the lower jaw.

By a routine examination of the urine during treatment one can easily detect the first signs of any toxic effects and so postpone any further injections until the child has had a rest for several weeks. This is, however, a necessary precaution and must be used constantly, since bismuth is by no means an innocuous drug which can be administered indiscriminately over long periods without an element of danger.

I have not encountered a single instance of any cutaneous manifestations of bismuth poisoning analogous to the dermatitis which is liable to occur with arsenic.

One child (Case No. XVIII.) suffering from juvenile general paralysis was purposely given a very intense course of bismuth, namely, ten injections or a total of forty-five cubic centimetres (that is, 4·5 cubic centimetres at each dose compared with two cubic centimetres which is recommended as the ordinary adult dose). She developed a severe albuminuria and the urine contained numerous casts and occasional red blood cells, while the mouth manifested a very severe stomatitis, the blue line extending throughout the whole length of both jaws and large blue patches were present on the fauces, soft palate, mucosa of the cheek and also on the tongue. The mouth became severely ulcerated and was extremely offensive and the child was quite ill. She became very pale and vomited frequently. At this stage all further bismuth was stopped and she was given peroxide of hydrogen gargles and "Listerine" mouth washes, a light diet and the bowels were kept regularly opened by saline purgatives. In three weeks she was quite well again as regards her general physical condition and apparently none the worse for the "bismuth poisoning." The blue line persisted for many weeks and became quite black and punctate in appearance before it finally subsided.

One young baby (Case No. V.) had completed a course of injections to which the clinical response had been very satisfactory and the serum was found to yield no reaction. A week later she developed bronchopneumonia and acute nephritis and died. The autopsy revealed a very acute nephritis and the possibility of the bismuth as a cause was considered. The kidneys were subjected to a rigid chemical examination and only traces of bismuth could be detected. In view of this result it seems reasonable to assume that the nephritis was a complication of the pneumonia as is known to occur from time to time or, alternatively, that it was of the nature of the acute nephritis to which congenital syphilitic babies are so liable, although in this particular instance the serum did not react to the Wassermann test at the time of onset of the renal condition.

Another infant (Case No. VI.) was of particular interest. This child had an extremely intense infection and the serum yielded a very strong reaction to the Wassermann test. She responded very well both clinically and

serologically and the blood ultimately failed to react. At this stage she developed a dacryocystitis and the tear duct was probed under light general anæsthesia; the infant collapsed and after much artificial respiration recovered slightly, but then died quite suddenly. *Post mortem* examination revealed a very large liver and spleen still persisting in spite of the treatment and the absence of response to the Wassermann test. The other point of interest was that the child succumbed during a minor operation.

Evidently the damage done by the spirochæte had persisted in spite of the fact that all active infection had been disposed of and the child was apparently well as judged by clinical standards, further evidence of the far reaching devitalizing action of the syphilitic infection.

Of the forty cases quoted in detail, the end results may be summarized in the accompanying table.

TABLE SHOWING SUMMARY OF END RESULTS OF BISMUTH TREATMENT.

Type.	No.	Apparently Cured.	Improved.	Not Improved.
(a) Congenital:				
(1) Florid	16	12[1]	4[2]	0
(2) Latent	7	4	2	1
(3) Unsuspected	12	8	4	0
(b) Acquired	5	4	1	0
Total	40	28	11	1

[1] One died later. [2] Three died later.

Conclusions.

The chief points submitted as the outcome of this investigation are as follows:

1. Bismuth is a valuable preparation in the treatment of syphilis in children and is apparently effective in curing the disease.

2. The clinical manifestations subside rapidly, but a somewhat longer period is required to alter the response to the Wassermann test than with the arsenicals.

3. The florid type responds more rapidly and more certainly than any of the other groups.

4. Bismuth causes much less local reaction at the site of the injection than arsenic.

5. Toxic symptoms can be avoided by careful observation of the mouth for the blue line and regular examination of the urine for albumin.

While admitting that the total number of patients included in this series is comparatively small, it is claimed that sufficient evidence can be gained from a study of the case histories to substantiate the above conclusions.

Acknowledgments.

Before finally concluding, I wish to thank all those members of the Honorary Medical Staff who have referred patients for treatment and thus provided the clinical material for this investigation and especially Dr. C. H. Kellaway, Director of the Walter and Eliza Hall Institute of Research, Miss F. Eleanor Williams, of the same Institute and Dr. R. J. Bull, of the Bacteriological Laboratory of the Melbourne University, for the painstaking manner in which they have carried out the large volume of serological work necessitated by the number of Wassermann tests on these children.

Also I would like to thank Dr. Reginald Webster and Dr. H. Boyd Graham for their willing assistance and helpful criticisms and suggestions at all times, Dr. Hylton for his valuable help on numerous occasions, Dr. C. H. Mollison for his *post mortem* notes on one of the patients, Dr. B. L. Stanton for the remaining *post mortem* reports and chemical investigations and Dr. Balboni and the Secretary of the Italian Consulate in Melbourne for their assistance in making available a number of the foreign journals.

Lastly I wish to acknowledge the valuable aid of various members of the nursing staff of the Children's Hospital in connexion with the administration of the treatment and collection of the specimens for the serological tests.

Summary of Clinical Histories of Patients with the Early or Florid Type of Congenital Syphilis.

CASE I.—The patient's age at the beginning of treatment was two months. The clinical history comprised snuffles, maculo-papular rash on legs, arms and trunk and superficial ulceration of the anal region. On June 29, 1925, the response to the Wassermann test before treatment was "+++" by the Harrison method and "+++" by the ice box method. Treatment consisted of ten cubic centimetres of "Bismol" given in ten injections. No reaction was obtained to the Wassermann test when performed by the Harrison and ice box methods after treatment on October 21, 1925. On May 11, 1926, no reaction was obtained to the test. The patient was apparently cured. The lesions rapidly disappeared.

CASE II.—The patient's age at the beginning of treatment was seven weeks. The clinical history comprised snuffles and blood-stained nasal discharge. A coppery rash was present on the legs, thigh and trunk. Later on there appeared a tender swelling of the right ankle and left elbow. The X ray report was one of "osteochondritis of the right tibia and left humerus." On September 10, 1924, before treatment the response to the Wassermann test by both the Harrison and ice box methods was "+++." Treatment consisted of twenty-four cubic centimetres of "Bismol" given in ten injections and of fifteen cubic centimetres of "Bismol" given in five injections. On December 15, 1924, after treatment, no reaction was obtained to the Wassermann test by the Harrison method and by the ice box method the response was "+±." No reaction was obtained by both methods on February 2, 1925, and on May 11, 1925. The patient was apparently cured. A good clinical response was obtained, the lesions at the ankle and elbow subsided rapidly. The patient subsequently became affected by pyobacilluria and died. A *post mortem* examination was not obtained.

CASE III.—The patient's history has already been mentioned. Treatment consisted in the administration of twenty-one cubic centimetres of "Bismol" in ten injections. After treatment no response was obtained to the Wassermann test when performed by both methods on September 22, 1924, April 6, 1925 and October 19, 1925. The patient was apparently cured. Improvement was rapid and weight was gained.

CASE IV.—The patient's age at the beginning of treatment was nine months. The clinical history comprised snuffles from birth and epistaxis from eight weeks with desquamation of palms and soles. The response to the Wassermann test before treatment on February 6, 1924, was "+++" by both methods. Treatment consisted in the administration of twenty cubic centimetres of "Bismol"

in ten injections and nine cubic centimetres of "Bismol" in three injections. The response to the Wassermann test after treatment on November 17, 1924, was "+++" by both methods. Definite improvement and gain in weight had occurred, but the patient contracted broncho-pneumonia and died in January, 1925. No *post mortem* examination was obtained.

CASE V.—The patient's age at the beginning of treatment was eight months. The clinical history comprised snuffles and generalized maculo-papular rash and enlargement of the spleen and liver. The response to the Wassermann test before treatment on October 6, 1924, was "+++" by both methods. (Sixty minimum hæmolytic doses of complement were fixed). Treatment consisted of the administration of twenty-six cubic centimetres of "Bismol" in ten injections. After treatment on January 12, 1925, no reaction was obtained to the Wassermann test by the Harrison method, but by the ice box method the response was "+ ±." Rapid clinical improvement had occurred. Broncho-pneumonia and acute nephritis resulted in death. *Post mortem* examination revealed a large and tough liver and spleen. The kidneys were enlarged and acutely congested with toxic spoiling and fatty change. The lungs manifested lobular consolidation.

CASE VI. has already been mentioned. Treatment consisted in the administration of twenty-five cubic centimetres of "Bismol" in ten injections and thirty cubic centimetres of "Bismol" in ten injections. After treatment on October 20, 1924, the response to the Wassermann test by the Harrison method was "+." By the ice box method the response was "+++." On January 19, 1925, no reaction occurred to both methods. The patient was apparently cured. Remarkable improvement was noticed during treatment. The patient became affected by acute dacyrocystitis. The duct was probed under general anæsthesia. The patient collapsed and died on January 30, 1925. According to *post mortem* notes supplied by Dr. Mollison the liver was enlarged, very fatty and tough, the spleen was greatly enlarged and tough.

CASE VII.—The patient's age at the beginning of treatment was nine weeks. The clinical history comprised a generalized rash, enlargement of the spleen and inability to use the left arm. The X ray report was one of "osteochondritis of the lower end of the radius and ulnar." The response to the Wassermann test before treatment on January 28, 1925, was "+++" by both methods. Treatment consisted in the administration of ten cubic centimetres of "Bismol" in ten injections. After treatment no reaction occurred to the Wassermann test by both methods on May 4, 1925, October 19, 1925, and April 19, 1926. The patient was apparently cured. The rash faded rapidly and the patient was able to use the arm after the first three injections.

CASE VIII. has already been mentioned. Treatment consisted in the administration of ten cubic centimetres of "Bismol" in ten injections and a second series. The response to the Wassermann test after treatment on June 1, 1925, was "+++" by both methods and on August 17, 1925, no reaction was obtained with both methods. The child was apparently cured. The general condition improved greatly, hydrocephalus ceased to progress. The patient went to Canada in January, 1926.

CASE IX.—The patient's age at the beginning of treatment was two months. The clinical history comprised swelling of the upper end of the left tibia, syphilitic osteochondritis. No other stigmata was present. The response to the Wassermann test before treatment on January 12, 1925, was "+++" by both methods. Treatment consisted in the administration of twelve cubic centimetres of "Bismol" in ten injections and ten cubic centimetres of "Bismol" in ten injections. The response to the Wassermann test after treatment on April 20, 1925, was "+++" by both methods (eight to ten minimum hæmolytic doses of complement were fixed). On July 6, 1925, no reaction was obtained to the Harrison method and the response to the ice box method was "+." On October 26, 1925, no reaction was obtained to both methods. The patient was apparently cured. Good movement of the leg was possible after the second injection.

CASE X.—The patient's age at the beginning of treatment was seven months. The clinical history comprised generalized enlarged shotty glands of the groin, axillæ and neck, hydrocephalus, dilatation of scalp veins and enlargement of the liver and spleen. The response to the Wassermann test before treatment on April 29, 1925, was "+++" by both methods. Treatment consisted in the administration of ten cubic centimetres of "Bismol" in ten injections in one series and three cubic centimetres of "Bismol" in three injections in a second series. The response to the Wassermann test after treatment on July 27, 1925, was "+++" by both methods. The result of treatment was incomplete, the glands subsided and the general condition improved.

CASE XI.—The age of the patient at the beginning of treatment was three months. The clinical history comprised enlargement of the liver and spleen and hydrocephalus. The response to the Wassermann test before treatment on January 19, 1925, was "+++" by both methods (thirty-five minimum hæmolytic doses of complement were fixed). Treatment consisted in the administration of ten cubic centimetres of "Bismol" in ten injections in one series and ten cubic centimetres of "Bismol" in a second series. The response to the Wassermann test after treatment on May 25, 1925, was "±" by the Harrison method and "++ ±" by the ice box method (one and a half minimum hæmolytic doses of complement were fixed). On September 7, 1925, no reaction occurred to both methods. The patient was apparently cured. The general condition was excellent.

CASE XII.—The patient's age at the beginning of treatment was five months. The clinical history comprised papular eruption, snuffles and enlarged spleen. The response to the Wassermann test before treatment on April 6, 1925, was "+++" by both methods (forty minimum hæmolytic doses of complement were fixed). Treatment consisted in the administration of twenty cubic centimetres of "Bismol" in ten injections. On April 24, 1925, no reaction was obtained to the Wassermann test by both methods. The patient was apparently cured. Improvement under treatment was rapid.

CASE XIII.—The age of the patient at the beginning of treatment was two months. The clinical history comprised snuffles and blood stained nasal discharge, a coppery rash on face, trunk and limbs and suppurative onychia of fingers and toes. The response to the Wassermann test before treatment on January 27, 1925, was "+++" by both methods. Eleven cubic centimetres of "Bismol" were given in ten injections. No reaction was obtained to the Wassermann test by both methods after treatment on May 4, 1925, August 3, 1925 and December 14, 1925. The patient was apparently cured. Improvement was rapid and the patient looked very well.

CASE XIV. has already been mentioned. Ten cubic centimetres of "Bismol" were given in ten injections. The response to the Wassermann test after treatment on September 14, 1925, was "++ ±" by the Harrison method and "+++" by the ice box method. Ulceration healed completely after the first injection. The patient then suffered from purpura and died of broncho-pneumonia on October 6, 1925. No *post mortem* examination was obtained.

CASE XV.—The patient's age at the beginning of treatment was two years and three months. The clinical history comprised snuffles and a rash at the age of four weeks and condylomata of the anal region. The patient did not attend hospital for two years after this was noticed. The response to the Wassermann test before treatment on October 13, 1924, was "+++" by both methods (six to eight minimum hæmolytic doses of complement were fixed). Twenty-eight cubic centimetres of "Bismol" were given in ten injections in one series and twenty cubic centimetres of "Bismol" in ten injections in the second series. The response to the Wassermann test after treatment on January 19, 1925, was "+" by the Harrison method and "+++" by the ice box method. No reaction occurred with both methods on September 21, 1925. The patient was apparently cured. The patient had a depressed nasal bridge.

CASE XVI.—The age of the patient at the beginning of treatment was eleven months. The clinical history comprised snuffles at the age of two months, dilatation of scalp veins and hydrocephalus. The response to the Wassermann test before treatment on October 19, 1925, was "+++" by both methods. Twenty cubic centimetres of "Bismol" were given in ten injections in one series and twelve cubic centimetres of "Bismol" in six injections in another series. The response to the Wassermann test after treatment on February 1, 1926, was "+ ±" by the Harrison method and "+++" by the ice box method. No reaction occurred to both methods on April 27, 1926. The patient was apparently cured. Gain in weight occurred.

Summary of Clinical Histories of Patients with Latent Syphilis Evident Some Years After Birth or About Puberty.

CASE XVII. has already been mentioned. Five series of "Bismol" injections were given. The first consisted of thirty-three cubic centimetres in ten injections, the second of twenty cubic centimetres in ten injections, the third of the same, the fourth of sixteen cubic centimetres in eight injections and the fifth of twenty-six cubic centimetres in ten injections. The response to the Wassermann test after treatment on February 9, 1925, was "+++" by both methods (four minimum hæmolytic doses of complement were fixed). On May 25, 1925, the response was "+++" by both methods (three minimum hæmolytic doses of complement were used). On August 10, 1925, no reaction occurred to the Harrison method and with the ice box method the response was "++±." On October 12, 1925, the response was the same. On March 15, 1926, no reaction was obtained by both methods. The patient was apparently cured. The ulceration of the palate healed in three weeks. The eyes gradually improved. A blue line appeared on the gums with some stomatitis. No abnormality was detected in the urine.

CASE XVIII.—The age of the patient at the beginning of treatment was twelve years. The clinical history comprised fits, staggering gait, slurring speech and mental degeneration for two years. The condition was one of juvenile general paralysis. Response to the Wassermann test before treatment on August 5, 1924, was "+++" by both methods (forty-five minimum hæmolytic doses of complement were fixed). Forty-five cubic centimetres of "Bismol" were given in ten injections, 2·9 grammes of "Novarsenobillon" were given in six injections, twenty cubic centimetres of "Bismol" were given in ten injections and thirty cubic centimetres of "Bismol" were given in ten injections. The response to the Wassermann test after treatment was "+++" by both methods on four occasions between September 22, 1924, and June 1, 1925 (the minimum hæmolytic doses of complement fixed varied from sixty in the first test to eighteen to twenty in the last test). The patient manifested no improvement. A blue line appeared on the gums, stomatitis was severe and albumin and casts were found in the urine. Diffuse arsenical dermatitis with jaundice occurred. The urine became clear by March, 1925. By June, 1925, the fits were more severe and frequent and the patient's mental condition was worse.

CASE XXIX.—The patient's age at the beginning of treatment was twelve years and one month. The clinical history comprised backwardness with recent slurring of speech. The child was constantly grinning. The response to the Wassermann test before treatment was "+++" by both methods. Twenty-eight cubic centimetres of "Bismol" were given in ten injections. After treatment no reaction was obtained to the Wassermann test on September 28, 1924, December 8, 1924 and June 15, 1925. Slight improvement was noticed.

CASE XX.—The age of the patient at the beginning of treatment was eleven years and six months. The clinical history comprised jaundice of gradual onset, enlargement of the liver and spleen of three weeks' duration and condylomata of the anal region. The response to the Wassermann test before treatment on June 2, 1924, was "+++" by both methods (six to eight minimum hæmolytic doses of complement were fixed). Twenty-four cubic centimetres of "Bismol" were given in ten injections. After treatment no reaction occurred to the Wassermann test on August 25, 1924, and on January 26, 1925. The child was apparently cured. Jaundice subsided, the condylomata disappeared and the general health was excellent.

CASE XXI.—The patient's age at the beginning of treatment was thirteen years and six months. The clinical history comprised chronic seborrhœic dermatitis of six months' duration. The response to the Wassermann test before treatment on April 28, 1924, was "+++" by both methods. Twenty cubic centimetres of "Bismol" were given in ten injections. On July 14, 1924, no reaction was obtained to the Wassermann test by both methods. The patient was apparently cured. Considerable improvement occurred after failure to respond to local application.

CASE XXII.—The patient's age at the beginning of treatment was eleven years. The clinical history comprised numerous punched out cutaneous ulcers which failed to heal with local treatment. The response to the Wassermann test on May 4, 1924, before treatment was "+++" by both methods. Twenty cubic centimetres of "Bismol" were given in ten injections. After treatment no reaction was obtained to the Wassermann test by both methods on four occasions between August 11, 1924, and September 21, 1925. The patient was apparently cured. The ulcers healed rapidly.

CASE XXIII. has already been mentioned. Five series of injections of "Bismol" were given. The first comprised twenty-four cubic centimetres in ten injections, the second forty cubic centimetres in ten injections, the third twenty-eight cubic centimetres in ten injections, the fourth twenty-five cubic centimetres in ten injections and the fifth after a six months' interval eighteen cubic centimetres in six injections. After treatment the response to the Wassermann test was "+++" on August 11, 1924, September 29, 1924, and January 1, 1925 (the minimum hæmolytic dose of complement fixed varied from thirty to thirty-five in the first to four to six in the last test). The response on May 5, 1925, was "±" with the Harrison method and "+ ±" with the ice box method (1·5 minimum hæmolytic doses of complement were fixed). On November 16, 1925, no reaction occurred with the Harrison method and with the ice box method the response was "++ ±." On June 29, 1926, no reaction occurred with the Harrison method and with the ice box method the response was "+ ±." Treatment was incomplete. The mouth healed well, a blue line and stomatitis subsequently appeared. Clinically the patient appeared very well.

Summary of Clinical Histories of Patients with Unsuspected Syphilis Discovered by Routine Wassermann Test Work.

CASE XXIV. has already been mentioned. Two series of "Bismol" injections were given, eighteen cubic centimetres in ten injections and thirty cubic centimetres in ten injections. After treatment the response to the Wassermann test on September 1, 1924, was "+" by the Harrison method and "+ ±" by the ice box method. No reaction occurred with both methods to tests carried out on December 27, 1924, April 6, 1925, October 19, 1925. The patient was apparently cured.

CASE XXV.—The patient's age at the beginning of treatment was four years and two months. The history comprised recurrent attacks of chronic bronchitis. The patient suffered from progressive muscle atrophy of the pseudo-hypertrophic type. Before treatment on August 11, 1924, response to the Wassermann test was "+++." Thirty-one cubic centimetres of "Bismol" were given in ten injections. After treatment on February 2, 1925, no reaction occurred to the Wassermann test by both methods. The child was apparently cured. An elder brother had previously been under treatment in a venereal disease clinic.

CASE XXVI.—The age of the patient at the beginning of treatment was three years and two months. The patient was well until the age of one year, was then ill with fever and convulsions, did not walk until two years old and when seen for the first time had a left-sided hemiparesis. Before treatment on May 19, 1924, the response to the Wassermann test was "+++" by both methods. Twenty-eight

cubic centimetres of "Bismol" were given in ten injections. After treatment no reaction was obtained to the Wassermann test by both methods on November 10, 1924, and March 2, 1925. The patient was apparently cured. After tenotomy had been performed the patient improved in walking.

CASE XXVII. has already been mentioned. Two series of "Bismol" injections were given, twenty-six cubic centimetres in ten injections and thirteen cubic centimetres in ten injections. After treatment on December 22, 1924, no reaction occurred to the Wassermann test with the Harrison method and the response to the ice box method was "++±." No reaction was obtained with both methods on four subsequent occasions between February 11, 1925, and July 13, 1926. The patient was apparently cured.

CASE XXVIII.—The patient's age at the beginning of treatment was six years and seven months. The patient had suffered from convulsions at intervals for three months. There was no history of birth injury. No stigmata were present. The infection was discovered by routine use of the Wassermann test. The response to the test before treatment on February 10, 1925, was "+++" by both methods. Twenty cubic centimetres of "Bismol" were given in ten injections. After treatment no response was obtained to the Wassermann test by both methods on June 22, 1925, and September 28, 1925. The patient was apparently cured. No fits have occurred since treatment was carried out.

CASE XXIX. has already been mentioned. Twenty-seven cubic centimetres of "Bismol" were given in ten injections. After treatment no reaction occurred to the Wassermann test by both methods on January 12, 1925, and June 22, 1925. The patient was apparently cured. The father and mother were both under treatment. The patient was a brother of Number XXX.

CASE XXX.—The patient's age at the commencement of treatment was three years. The infection was discovered as a result of routine testing. The patient was backward in speech, but otherwise apparently healthy. Before treatment the response to the Wassermann test on September 22, 1924, was "+++" by both methods (sixty minimum hæmolytic doses of complement were fixed). Four courses of "Bismol" injections were used, twenty-six cubic centimetres in ten injections, twenty cubic centimetres in ten injections, twenty cubic centimetres in ten injections and sixteen cubic centimetres in eight injections. After treatment the response to the Wassermann test was "+++" on January 12, 1925, and May 16, 1925 (the minimum hæmolytic doses of complement fixed on each occasion were thirty-five to forty and six to eight). On September 21, 1925, the response by the Harrison method was "++±" and on April 12, 1926, it was "+±." Treatment was incomplete.

CASE XXXI.—The age of the patient at the beginning of treatment was four years and two months. The child was apparently healthy, but there was a history of rash and fissures at the angles of the mouth in infancy. The response to the Wassermann test before treatment on January 15, 1924, was "+++" with both methods (sixty minimum hæmolytic doses of complement were fixed). Three series of "Bismol" injections were given. Thirty-five cubic centimetres were given in ten injections, twenty cubic centimetres were given in ten injections and this series was repeated. After treatment response to the Wassermann test was "+++" by both methods on January 12, 1925, and May 11, 1925 (thirty-five to forty minimum hæmolytic doses of complement were fixed on the first occasion and twenty-five to thirty on the second). On September 21, 1925, the response was "+" with the Harrison method and "+++" with the ice box method. Treatment was incomplete. The infection was discovered when a younger sister, Number V., came under observation.

CASE XXXII.—The age of the child at the beginning of treatment was four years and two months. There was a history of snuffles and rash as a baby. No stigmata were obvious on the child's attendance at hospital. The infection was discovered when a younger brother, Number XI., attended. The response to the Wassermann test before treatment on February 23, 1925, was "+++" by the Harrison method. Twenty cubic centimetres of "Bismol" were given in ten injections. The Wassermann test after treatment on July 6, 1925, yielded a "++±" response by the Harrison method. The result of treatment was incomplete.

CASE XXXIII.—The patient's age at the beginning of treatment was two years and six months. The child was well except for repeated colds. The response to the Wassermann test before treatment on March 2, 1925, was "+++." Twenty cubic centimetres of "Bismol" were given in ten injections. No reaction was obtained to the Wassermann test after treatment on July 27, 1925. The child was apparently cured. Infection was discovered when a younger brother, Number XI., attended.

CASE XXXIV.—The age of the child at the beginning of treatment was two years and nine months. It was apparently healthy and had no stigmata. The parents were under treatment. Infection was discovered by routine use of the Wassermann test, the response to both methods on June 30, 1924, being "+++" with twenty-five to thirty minimum hæmolytic doses of complement. Three series of "Bismol" injections were given, twenty-four cubic centimetres were given in ten injections, thirty cubic centimetres in ten injections and fourteen cubic centimetres in six injections. After treatment on November 3, 1924, the response to the Wassermann test by the Harrison method was "++±" and by the ice box method "+++" (five minimum hæmolytic doses of complement being fixed in each instance). On April 6, 1925, no reaction was obtained to the Harrison method and the response to the ice box method was "+±." On November 16, 1925, the response was "+" with the Harrison method and "+±" with the ice box method. The result was incomplete.

CASE XXXV.[1] has already been mentioned. Three series of "Bismol" injections were given; twenty cubic centimetres were given by ten injections and this was repeated, twelve cubic centimetres were given by six injections. The response to the Wassermann test after treatment from July 20, 1925, was "++±" by the Harrison method. On October 26, 1925, the response was "±" by the Harrison method and on June 13, 1926, no reaction was obtained. The child was apparently cured and was clinically much better.

Summary of Clinical Histories of Patients Suffering from Syphilis of the Acquired Type.

CASE XXXVI. has already been mentioned. Four series of "Bismol" injections were given. The first consisted of twenty-eight cubic centimetres in ten injections and the last three of twenty cubic centimetres given in ten injections. The response to the Wassermann test after treatment on February 9, 1925, and on May 25, 1925, was "+++" by both methods (twenty-five to thirty minimum hæmolytic doses of complement were fixed on the first occasion and sixteen to eighteen on the second). On August 17, 1925, the response to the Harrison method was "+" and to the ice box method "+++." No reaction was obtained to both methods on December 21, 1925, March 22, 1926, and August 31, 1926. The child was apparently cured. The lesions cleared after the first few injections.

CASE XXXVII.—The age of the patient at the beginning of treatment was four years and ten months. The child suffered from chronic bronchitis and had no stigmata of congenital syphilis. The response to the Wassermann test before treatment on December 1, 1925, was "+++." Twelve cubic centimetres of "Bismol" were given in six injections. No reaction occurred to the Wassermann test after treatment on February 1, 1926, and on September 21, 1926. The child was apparently cured. The serum of the mother (a widow) and of three sisters failed to yield a reaction.

CASE XXXVIII. has already been mentioned. Twenty cubic centimetres of "Bismol" were given in ten injections. On December 21, 1925, after treatment the response to the Wassermann test by the Harrison method was "+±." The result of treatment was incomplete. The patient went away to the country.

CASE XXXIX. has already been mentioned. Three series of "Bismol" injections were given. The first two con-

[1] The serum of the mother of every patient in Cases I. to XXXV. reacted strongly to the Wassermann test.

sisted of thirty cubic centimetres given in ten injections and the last of twelve cubic centimetres given in six injections. The response to the Wassermann test after treatment on February 8, 1926, and on May 1, 1926, was "++±" by the Harrison method. On June 6, 1926, no reaction was obtained. The child was apparently cured. The knee was apparently quite cured and the eyes were well.

CASE XL. has already been mentioned. Twenty-nine cubic centimetres of "Bismol" were given in ten injections. On March 22, 1926, no reaction to the Wassermann test was obtained. The child was apparently cured.

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SOME MEDICAL ASPECTS OF THE SETTLEMENT AT THE RIVER DERWENT (1803-1805).

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Introduction.

OF recent years more and more attention has been given in the various States to the pioneer work of our profession. The settlement of Tasmania, as in New South Wales, was made very difficult by the fact that England was so remote. Again and again we read of the scarcity of wheat and of fresh vegetable food. During our first years there was no surplus from Sydney to be drawn on and the original foods of the expedition became very defective (a large quantity of pork and biscuits were actually condemned). In consequence scurvy and other debilitating diseases became frequent. The sending of prisoners into the bush to provide fresh kangaroo meat was the first step to some of them remaining out as bushrangers. With the gradual provision of cereals from local farming the settlement became self-supporting with a corresponding improvement in the health of the settlers.

It is very greatly to be regretted that no private journal of any of the surgeons mentioned in this paper has come to the light of day. It is very possible, however, that such may still be extant in England or even in the mainland States.

Early Medical Practitioners of Tasmania.

The first association of the medical profession with Tasmania was a most historical one. Mr. Bass had been for some time associated with the settlement of Port Jackson as an assistant surgeon. On more than one occasion he had with the approval of the Governor made voyages in a southerly direction along the coast of New Holland. In September, 1798, Governor Hunter lent Flinders and Bass the sloop *Norfolk* with eight men for twelve weeks. They passed through the straits and circumnavigated Tasmania for the first time. Flinders called the straits after Mr. George Bass because the latter had virtually discovered them on a previous voyage, when his whaleboat had had to turn back from Westernport.

The *Norfolk* left Port Jackson on October 7, 1798, and returned on January 17, 1799. Mr. Bass subsequently was taken by the Spaniards on the west coast of South America and is believed to have died in captivity in their mines.

In the settlement of Van Diemen's Land two expeditions have to be considered: (i.) that of Lieutenant Bowen which was equipped from Port Jackson by Governor P. G. King, to forestall a possible French occupation. It occupied Risdon Cove on September 7, 1803. (ii.) The expedition of Lieutenant-Colonel David Collins. This was sent from England to colonize Port Phillip. Collins believed that area to be unsuitable and sailing for the Derwent founded the settlement at Sullivan's Cove (now Hobart) on February 19, 1804. On September 7 and 12 arrived respectively the ships *Lady Nelson* and *Albion*, with Lieutenant Bowen and the members of his expedition. The establishment comprised forty-nine persons including the military guard and convicts. The surgeon to the expedition was Mr. Jacob Mountgarrett, late of H.M.S. *Glatton*, whose warrant was signed on March 31, 1803, by Governor King "to act either as Surgeon of the such intended settlement or assistant Surgeon as His Majesty's pleasure may direct."

Mr. Mountgarret seems to have been, like Bass, eager for a change from the routine duties of his office and replied to the warrant as follows:

> SIR: In answer to your letter of the 31 March, I beg to acquaint you that I consider myself much obliged for the appointment of surgeon to the settlement on Van Diemen's Land, and will with pleasure await the determination of His Majesty; nor do I hold your Excellency at all responsible for any pay whatever that may be granted for my services.
>
> And am, &c.,
> JAC'B MOUNTGARRET.

He also was far-sighted enough to take with him certain live stock, as on a return dated in September, 1803, he is shown as the possessor of one cow, six goats, three sows with sixteen young, three sheep and one ewe lamb. Mr. Mountgarret too must have shown signs of considerable administrative ability, as when by November, 1803, the expedition of Governor Collins was about to sail for the Derwent, Lieutenant Bowen is instructed as follows:

> Lieutenant Bowen is to deliver his command to Lieutenant-Colonel Collins: should the latter however decide to settle at Port Dalrymple and not at Hobart, Lieutenant Bowen is to hand over the command of the Risdon settlement to Mr. Mountgarret until Governor King can make further arrangements: if it is convenient to that gentleman.

The last mention of him in relation to the Risdon settlement is a receipt in his name for the sum of £105 5s. sterling for services at the Derwent.

Space will not permit to tell in detail of his services as Magistrate at Port Dalrymple, his exploring trip on which the Franklin River was discovered, or of his other activities.

The expedition of Collins having arrived on February 15, 1804, let us consider the personnel of his party.

Colonel Collins having landed and sited his camp, had only tents and rough shelters. He, therefore, housed his sick at the hut of Surgeon Mountgarret at Risdon settlement. Twelve patients with diarrhœa were placed under the care of that officer, one of whom, a carpenter, died, the others making a recovery. The numerical strength of the party on landing was about two hundred and fifty of all ranks.

The medical staff at this time consisted of three gentlemen: William l'Anson, Surgeon, Matthew

Bowden, First Assistant Surgeon, William Hopley, Second Assistant Surgeon. Their equipment was as follows:

Medecine, an assortement of, for 547 men for two years.
Surgical instruments, three complete sets.
Furniture and necessaries for the Hospital.
Bedding for the Hospital.
Vinegar for the same.
Three hundred spare beds with bedding complete.

This equipment was that of the expedition on leaving Spithead and part must have been drawn on at the Port Phillip camp, leaving the balance still available for use.

The commission of l'Anson reads as follows:

To our trusty and well beloved William l'Anson, Gent.: greeting, we reposing trust in your loyalty, integrity and ability do by these presents constitute and appoint you to be our assistant surgeon to our settlements in New South Wales. YOU are . . . to diligently and carefully to discharge the duty of assistant surgeon . . . and you are to observe and follow such orders and directions from us . . . according to the rules and discipline of War.

Similar commissions of the same date were issued to Bowden and Hopley. In the second general order of the Lieutenant-Governor, dated February 21, 1804, a reference to water reads as follows:

The Lieutenant-Governor having at length been enabled to fix the settlement advantageously and in a situation that appears to be blessed with that great comfort of life, a permanent supply of fine running water, cautions the people against polluting the stream by any means whatever. A proper place for them to water at shall be pointed out and he positively forbids them going into or destroying the underwood adjacent to the water, under pain of being severely punished.

The settlement at Risdon now being removed, Collins writes to Sydney in reference to Mr. Mountgarret, pointing out that he wishes to remain in Van Diemen's Land as he has considerable stock to dispose of. This the Lieutenant-Governor is willing to accede to on condition that he remains as a private settler only and not as an official surgeon. He remarks, too, that it would be a flagrant injustice to the medical gentlemen of his expedition were Mountgarret to remain on the medical staff of the colony at the expense of either of them. He also adds:

I feel myself very much at ease with the medical aid which has been provided for me and do not consider that for some years to come any addition to them will be required.

After the landing it is evident that the various stores were examined and overhauled; the surgeon represents that in the medical department most of the instruments had been in use before they were put up and many of them bear the mark of Evans, who had been succeeded by Stoddart. In that way the settlement had been deprived of the improvements introduced by the latter (March 4, 1804).

In May occurred the first collision with the natives at Risdon, when owing to their supposed threatening attitude they were fired on by the military and two were killed. Mr. Mountgarret, seeing the large number of hostile natives, suggested the firing of the carronade, when they dispersed. He also with some soldiers and prisoners followed them some distance up the valley and had reason to suppose they had some wounded, as one was seen to be bleeding.

Scurvy.

In July the *Ocean* arrived after a tempestuous voyage of thirty-three days from Port Phillip, during which a considerable number of live stock was destroyed. She brought also a large sick list of mostly scorbutic patients. The Lieutenant-Governor states that indeed the scurvy had commenced to show itself among the people that had come with him; but adds that the fresh meat that he had been able to give owing to the abundance of kangaroos, would, he hopes, soon subdue it.

This is the first mention of the disease that was to prove so serious during the first year of the settlement.

Provisions were commencing to run short and application was made to Sydney (July 31) for further supplies. The first winter being now fully established and the food supply monotonous and not excessive in amount, that is, seven pounds of beef or two pounds of pork (salt), seven pounds of flour and six ounces of sugar per week, sickness began to be felt and extra provisions, clothing and stores were requisitioned for. A long list of medicines were applied for by Mr. l'Anson in place of those not sent out in the first place or that would be needed by the time they could arrive from England. The consumption of hospital medicines and stores had been very great, as no less than four hundred and sixty-seven people had been under medical treatment since landing at Port Phillip and he adds: "most of them had required a daily allowance of wine." He goes on to state:

I have mentioned a supply of blankets and rugs is to be sent out as the winter season in these latitudes has been severely felt . . . a mountain in my neighbourhood has for weeks been covered in snow (Mount Wellington).

Scurvy, diarrhœa and catarrh are the prevailing diseases . . . he trusts dry weather and the sun will improve matters and makes the recommendation that new arrivals in the way of prisoners shall be landed here in the summer and in that way be accustomed before winter sets in.

In July, 1804, six attendants are shown as attached to the hospital and the large requisition of medicines required include:

Pulvii ipecacuanhæ compositæ, pounds two.
Mel, pounds two.
Oleum olivæ, pounds forty.
Oleum ricini, pounds two.
Tinctura digitalis, ounces eight.
Tinctura opii, pounds two.
Lint, fifty pounds.
Lime juice, pounds thirty-six.
Portable soup, pounds two hundred.
Flannel and calico for bandages, of each twenty yards.
One dozen bougies.
Two dozen lancets.

By this time (July 31, 1804) nine deaths had taken place at the settlement of one marine, two free infants and six prisoners (cause not stated).

The Lieutenant-Governor caused a *post mortem* examination to be held on the body of Nicholas Pirvelle owing to a rumour that he had died of poison. The report of Mr. Bowden, the Assistant Surgeon, read:

After opening the body, the thorax, the pericardium and both sides of the chest contained a large quantity of water, which had stopped the action of the lungs. The heart was unusually large, but not otherwise diseased. In the abdomen I examined the stomach and intestines particularly, which were perfectly healthy and contained a small quantity of half digested food, in which there was nothing remarkable. The liver was much enlarged from some former disease.

(Signed). M. BOWDEN.

Mr. Bowden again appears in routine orders for July 1. A ewe lamb of his having disappeared (stolen) from the pen in the rear of the hospital in the course of the night, a conditional emancipation is offered to any prisoner who shall enable a conviction to be made. In the routine orders for July 27 the assistant surgeon on duty at the hospital is ordered to attend all punishments that may occur among the prisoners. The surgeon is also requested to give in a return of the actual number of people who have been under medical treatment from May 1 to July 31, specifying what may appear to have been the prevailing diseases and the causes that may have occasioned them. The Lieutenant-Governor was still corresponding direct with England and on November 10, 1804, he reports by the whaler *Alexander* that had been fishing in the neighbourhood, to Lord Hobart:

On the 9th August last there were only twenty-nine persons in the surgeon's report of the sick and lame, but I am much concerned to have to state that from that period to the present the scurvy has broken out among the people in an alarming degree.

Unfortunately for us, the sourness of the ground which we have turned up, impeded vegetation and not being able to derive any other check to this disease than by supplying fresh meat to those that were afflicted therewith, I directed the D Commissioner to receive kangaroo meat into the public store at sixpence the pound for any one who might deliver it: and I have the satisfaction of acquainting your lordship that, though some have died, yet many have been preserved by the adoption of this measure. The meat of this animal being boiled into soup with rice and such vegetables as I could from time to time furnish from the government gardens. Not less than sixty persons had been served at different times with a quart each from the hospital. The season of the year has been adverse to my deriving much benefit from fish . . . but whatever has been in my power I have sent to the sick.

Among those that have died, I have regret the loss of some sawyers and carpenters, but I trust that many months will not elapse before I shall receive recruits in these very useful branches.

Even then the worst of the epidemic must have been over, as he adds:

I enclose the medical report of the sick and lame for the day, the number of which I have every hope will be daily decreasing, as the surgeon assures me that there is but one of the whole number about whom he entertains any apprehension; of those who are well there are many . . . . who are only fit for hut keepers.

Surgeon l'Anson reports as follows:

General Hospital,
Hobart Town,
8 September, 1804.

Sir: From the general prevalence of that malignant epidemic disease, the sea scurvy, among the convicts and which I am sorry to say, appears to be gaining ground daily, I feel it my duty to represent to you that, as a vegetable diet (the most certain and effectual remedy) cannot at present be obtained, I am of the opinion a supply of fresh animal food as kangaroo would have a good effect in subduing the disease.

W. l'Anson, Surgeon.

Attached to the above are returns of persons who have died between August 9 and November 9, 1804 (both dates inclusive): Eleven male prisoners, of whom nine died of scurvy and one each of dropsy and catarrh; three marines, five free persons and twenty-eight prisoners sick. Of these thirty-six cases, scurvy accounted for twenty-one, diarrhœa for five, debility for two, ophthalmia for one, catarrh for two, consumption for one, lameness for one, dislocated toe for one, contused knee for one, and sore head for one.

The receipt of kangaroo meat at the store was discontinued. The whole quantity received between September 10, the date of the order and December 30, when it was discontinued, was 3,142 pounds, of which only 2,614 pounds were paid for by the Commissary, the remainder being sent in by Collins.

Our gardens being now abounding in vegetables, I have little fear of the scurvy again making its appearance amongst us and should it arrive with any newcomers, I trust we shall be able speedily to subdue it.

Vaccination.

The Lieutenant-Governor in a despatch dated February 26, 1805, touches on this question. He states:

The case of vinegar for the use of the hospital is very acceptable and the surgeon has requested me to inform Your Excellency (Governor P. G. King) that the vaccine virus, which he received from Mr. Jamieson, has failed in every instance in which he tried it.

This must have been occasioned by the weakness of the virus alone, as Mr. l'Anson had particularly attended to the practice of inoculating for the cowpox, previous to his departure from England. The matter was remedied by December of the same year, when the Lieutenant-Governor states:

We have received the vaccine successfully. The medical gentlemen understand that Mr. MacMillan had as remuneration for keeping it alive or introducing it in Sydney, two cows allotted to him from the public stock. . . .

As they have been very attentive to the preservation of the disease, I shall have not any objection to rewarding them in a similar way, if such a mode has been adopted in Port Jackson.

An enclosure reads:

Return of children inoculated with vaccine virus since its first introduction by —. McMillan, Esq., Surgeon of H.M. Ship *Buffalo*, 9 Nov. 1805.

Inoculated: John Bowden, William Thorne, Richard Hopley, Henrietta Thorn and Robert Hobart May (a native of Van Diemen's Land). The above children were inoculated and took the infection in the most favourable manner. At present under inoculation: Caroline Maria Risely, Sarah Davis. From the present appearance of the above two cases there is every reason to expect a favourable termination of the disease.

William l'Anson, Surgeon.

General Hospital,
Hobart Town,
19 Dec., 1805.

References.

For the great part of the detail of this paper I have drawn on Volume I., Series 3, of the *Historical*

Records of Australia. These have been most admirably edited by Dr. Fredk. Watson. They contain an immense amount of material relating to the medical as well as other activities of the expeditions concerned with the settlement of New Holland.

Those who may wish to obtain fuller information of the conditions of life and of the difficulties met with both by land and by sea, cannot do better than consult the work of the following great soldiers and navigators:

Cook, Capt. James, "Three Voyages," 1773-84.

Collins, David, "Account of the E. Colony in N.S.W.," 1798-92 (contains Bass's voyage).

Flinders, Matthew, "Voyage to Terra Australis," 1801-3.

Grant, Capt. James, "Voyage to N.S. Wales," 1800-2.

Philip, Arthur, "Voyage to Botany Bay," 1789.

Hunter, Adam John, Journal, Sirius, 1793.

The Historical Records of New South Wales also offer a great field for investigation.

Reports of Cases.

WANDERING ENDOMETRIOMA.[1]

By REGINALD DAVIES, O.B.E., M.B., Ch.M. (Sydney), F.R.C.S. (Edin.),

Lecturer in Gynæcology, The University of Sydney; Honorary Gynæcological Surgeon, The Royal Prince Alfred Hospital and Saint Vincent's Hospital, Sydney.

Clinical History.

MRS. G.N., *ætatis* forty-one years, was married for sixteen years, she had had no children and no miscarriages; she consulted me on May 10, 1926. for the following symptoms: Constant bleedings on and off between periods for the last two years so that she is practically unable to distinguish between her proper periods and the bleedings, bleeding increasing in quantity, no pain.

On examination a large, firmly-fixed pelvic tumour was palpable. It was insensitive and of the consistence of a fibromyoma and it was diagnosed as this. Hysterectomy was advised.

Operation was carried out on May 13, 1926.

Curettage revealed nothing remarkable as regards the endometrium, the uterine cavity was found to be forwards and the bulk of the tumour in the posterior wall.

On opening the abdomen an extraordinary sight presented itself. All that could be seen of the uterus was a small portion of the anterior wall, the sigmoid flexure from the left and the *caput caeci* and the appendix from the right appeared pulled downwards and towards the mid-line and plastered on to the posterior surface and on top of the *fundus uteri* and to the back of the inner portion of both Fallopian tubes.

The peritoneum of the bladder appeared "caught up" on to the lower portion of the anterior surface of the uterus.

Showing through the line of junction were numerous dark spots and blisters looking like small cysts of peritoneum containing bloodstained fluid.

It was soon evident that there was no such thing as a line of cleavage and it was only by scissor work that I was able finally to separate the intestine *et cetera* from the uterus. It was then seen that both tubes and ovaries were bound down in the general mass of very firm adhesions. Both tubes were very much enlarged and both ovaries were polycystic and the cyst contents were dark fluid. One cyst in the right ovary was the size of a small orange. The appendix was first removed and it was noticed that the bowel wall at the base of the appendix was very much thickened.

A panhysterectomy with double salpingo-oophorectomy was performed except for a small portion of healthy appearing left ovary which was left *in situ*.

On section it was seen that both anterior and posterior walls of the uterus were much thicker than normal and that the posterior wall especially was the seat of a growth which was not encapsulated; the cut surface showed numerous cysts containing dark fluid.

The specimen was mounted for me by Dr. Little, but unfortunately at Saint Vincent's Hospital the tubes and ovaries became lost so that I have only the uterus to show you.

The unencapsulated and cystic nature of the growth is still easily demonstrable in the specimen. A section was examined by Professor Welsh whose report was as follows:

> The tumour of the uterus has the structure of adenomyoma in which islets of whole endometrium form an essential part of the growth. The adhesions to bladder and bowel are probably due to invasion by these islets of endometrium so that they represent an endometrioma (wandering endometrium), a new growth of low grade malignancy but of somewhat persistent local invasion. Complete local removal is therefore indicated.

Clinically the patient made an uninterrupted recovery except that on the twentieth day she developed a thrombosis of her left femoral vein, a condition from which she had suffered before and which cleared up without trouble.

On September 22, 1926, vaginal examination showed that the upper extremity of the vagina appears embedded in a swelling of a diameter of about 3·75 centimetres (one and a half inches). The swelling appears to be occupying the floor of the pouch of Douglas and to be attached to the rectum. The swelling is free from tenderness and the patient is quite unaware of anything abnormal. The patient's general health has considerably improved and she is about 6·3 kilogram (a stone) heavier than before her operation.

Discussion.

L. B. Herd in *The British Medical Journal* of March 13, 1926 (extracted from *Journal of Obstetrics and Gynæcology of the British Empire*, Winter Number, 1925, page 649) states his conclusions from the microscopical examination of twenty-five cases of endometrioma.

He has found microscopical evidence of endometrioma originating in several ways: (i.) In the uterus he considers the tumour is nearly always due to extension from the endometrium. (ii.) In the ovary he finds that the endometrial tissue gains access in several possible ways. The first is by direct extension through the uterine wall and utero-ovarian ligament to the ovary. The second is by implantation of fragments of endometrium regurgitated through the Fallopian tubes, presumably I suppose during the progress of menstruation. He also states that the condition may arise by conversion of tubal endometrium of the abdominal ostium into endometrium, by conversion of capsular epithelium into endometrium and by developmental errors such as inclusion of part of the Müllerian duct in the ovary.

I am afraid that I am not sufficiently acquainted with pathological possibilities to be able to appreciate at their possible true value the last three methods of formation of endometriomata, but in the absence of that higher knowledge they seem to me extraordinarily far-fetched.

Elsewhere in the pelvis Herd states that the condition arises either by developmental errors, implantation through the tube, extension from or rupture of a tarry cyst somewhere else in the pelvis or by extension from an endometrioma of the uterus. Clinically Herd finds these tumours usually occur in patients of between thirty and fifty years of age and most commonly are associated with intermenstrual dysmenorrhœa and attacks of acute pain when situated in the ovary. It is hard to see why these patients should suffer from intermenstrual dysmenorrhœa.

In the *Surgical Clinics of North America*, February 26, Volume VI., Number 1, at page 124 there is a very concise description of "Perforating Chocolate Cysts of the

[1] Read at a meeting of the Section of Obstetrics and Gynæcology of the New South Wales Branch of the British Medical Association on September 29, 1926.

Ovary (Sampson's Cysts)" or endometrioma. In this it is stated that these cysts occur in about 10% of all gynæcological intraperitoneal operations; that they are caused by back flow of endometrial fragments from the uterus through the tubes and that they are naturally associated with an obstruction to the outflow of menstrual blood such as occurs in cases of cervical stenosis, retroflexion, myomata *et cetera*.

Adherent retroflexion unless there is a frank adnexitis present is stated to be practically always associated with perforating cysts. According to this description Sampson considers that first there is developed a cyst of the ovary, this with each menstruation finally enlarges to bursting point and does so, scattering blood and fragments of endometrium on to the surface of the ovary and into the pouch of Douglas; thus are formed further cysts in the ovary and on the peritoneum.

Sampson has also shown that the transplanted endometrium may gain access to the lymph spaces and there develope like a cancer, this accounting in all probability for many such tumours found in the round ligaments and in the inguinal region.

It is stated in this paper that there seems little doubt that these lesions may be the causative factors in the production of adenomyoma of the uterus and of the rectovaginal septum.

It is possible also that these tumours may be the starting point for some of the ovarian cysts, both malignant and benign, as well as being a nidus for extrauterine pregnancy. Webster, of Chicago, has maintained for many years that ovarian pregnancy could not occur unless Müllerian tissue was present in the ovary.

While it is easy to understand how endometrial tissue, once having been regurgitated through the Fallopian tubes, might attach itself to and grow in the ovary and from there be spread to other parts as above described, still it seems hardly necessary to explain adenomyoma of the uterus as being due to an ingrowth from the outside into the uterine wall, when we have the original endometrium of the uterus much more favourably situated for developing such a growth.

With regard to Webster's view that ovarian pregnancy cannot occur without a nidus of endometrial tissue present in the ovary on which a placental site can form, there is an interesting paper by Dawson, of Adelaide, in THE MEDICAL JOURNAL OF AUSTRALIA of August 21, 1926, on ovarian pregnancy and endometrioma in which the writer concludes that an impregnated ovum can implant itself only on Müllerian tissue capable of deciduous change and not haphazard upon any tissue for which it has no philogenetic attraction. He concludes therefore that: (i.) Ovarian pregnancy probably does not occur in a Graafian follicle, (ii.) it does not occur fortuitously in fissures and scars of the surface of the ovary, (iii.) that it does occur when endometrial tissue is present in the form of an endometrioma which, participating in the deciduous changes consequent upon impregnation, offers a suitable and philogenetic bed for implantation.

I have wandered rather far from the subject matter of my communication in that my case, the only one I have recognized, is of no value as a support for any of the theories advanced as to the formation of these growths. The whole thickness of the uterine wall, both tubes, both ovaries and all the peritoneum of Douglas's pouch were one mass of the disease and from my case it would be quite impossible to form any conclusion as to whether the tumour originating in the endometrium travelled out through the uterine wall to attack the peritoneum, tubes and ovaries or whether the condition originated in an implantation of endometrial tissue in the ovary and from there travelled backwards through the uterine wall from without inwards or whether (which is probably more likely) the two conditions were proceeding at the same time. I find it very hard to believe that these cases occur so frequently as in 10% of all gynæcological laparotomies.

It is true that fairly frequently one finds small cysts in the ovary containing tarry fluid and I have occasionally seen small, dark swellings within the broad ligament which I in my ignorance regarded as small thromboses.

The complete absence in such cases as I have met with, of any evidence of further growth would seem to militate against the idea that they were of the nature of endometriomata.

AMŒBIC DYSENTERY ACQUIRED IN NORTH QUEENSLAND.

By A. H. BALDWIN, M.B., B.S. (Melb.), D.P.H., D.T.M. & H.; G. M. HEYDON, M.B. (Sydney), D.P.H., D.T.M. & H.;

AND

J. A. BROBEN, B.A., M.B., B.S. (Melb.).

(From the Australian Institute of Tropical Medicine, Townsville.)

ALTHOUGH a certain number of well authenticated cases of amœbic dysentery acquired in Australia have been reported, fresh ones are always of interest. The subject of the present note acquired the infection in tropical Australia.

Mr. X., about thirty years of age and of North European descent, was at Cambridge Sheep Station, about thirty miles from Richmond, North Queensland, when his first symptoms appeared, about the middle of September, 1926. During the week preceding the onset he had been working at various scrub cutters' camps near Richmond and for three weeks before that at a shearing shed on Cambridge Station, where there were forty or fifty men. He had never been out of Australia and for the last five years had been continuously in North Queensland. There was no history of previous attacks of dysentery. In one of the scrub cutters' camps was another man who had also never been out of Australia and who developed similar symptoms a day or two before Mr. X. There was also an ex-soldier who had been in Palestine and Mesopotamia; he had no symptoms and gave no history of dysentery.

Mr. X.'s first symptom was diarrhœa which gradually became worse and blood was first noticed about a week after the onset. There was little pain or tenesmus. The number of motions per day reached fourteen or fifteen, consisting largely of blood and mucus. The patient was admitted to Richmond Hospital where his treatment included polyvalent antidysenteric serum. He continued to pass blood and mucus with slight amelioration in his symptoms at times up to the time of his admission to the Townsville General Hospital about ten weeks after the onset. He stated that he had lost two stone (12·6 kilograms) in weight. He was there treated with emetin bismuth iodide 0·18 gramme (three grains) every evening for nine days and improvement set in rapidly from the beginning of the treatment. He left the hospital without any symptoms and no relapse has occurred up to January 8, 1927.

A fresh stool examined on November 27, 1926, at this Institute before the emetin treatment began consisted of fluid faecal matter with a good deal of blood and mucus. A portion of this examined under the microscope contained numerous red blood corpuscles, fairly numerous eosinophile cells, many epithelial cells, many bacteria, Charcot-Leyden crystals and numerous amœbæ. Polymorphonuclear leucocytes were not numerous and did not exhibit the features found in acute bacillary dysentery. In a specimen, examined two days later, the amœbæ were still more numerous. On both occasions some of them were fairly active and in morphology and character of movement resembled *Entamœba histolytica*. A large proportion of them contained ingested red blood corpuscles.

After the course of emetin bismuth iodide his stools were examined on December 11, 1926, and January 5 and 6, 1927. They were of normal character and neither amœbæ nor cysts could be found.

From inquiries made it appears that the second man who became affected about the same time as Mr. X., had symptoms of severe dysentery with blood and mucus and became very weak. His condition improved for a time, but a relapse occurred and he was treated with emetin with benefit. Dr. Richards, of the Commonwealth Health

Laboratory in Rockhampton, examined his fæces in the latter part of December and found them normal and free from amœbæ and cysts.

Reviews.

DISEASES OF CHILDHOOD.

THE fifth edition of Dr. R. Hutchison's well known "Lectures on Diseases of Children" is dedicated to the late Dr. John Thomson, of Edinburgh, who has been acknowledged as one of the very best authorities on children and it will be generally conceded that Thomson's mantle has fallen on the shoulders of the author under consideration.[1] The book has been revised thoroughly and the lecture on wasting has been rewritten and six new lectures have been added.

The lecture on wasting is most instructive; the author discusses many points overlooked by the general practitioner. He draws attention to the fact that wasting may be due to a mere insufficient intake of food or in other words starvation, which may be the result of ignorance, carelessness or even mistaken kindness, and these may be collectively considered under improper feeding. He divides this error into quantitative and qualitative types. He classes also broncho-pneumonia and latent empyema amongst the unsuspected causes. In treatment he advises the practitioner to go slowly and to play for safety and deprecates the exaggerated importance of increased weight alone as an index of progress.

The lecture on rheumatic carditis, though short, is full of wisdom. Hutchison considers that the causative organism produces a toxin which affects the heart in the same way as the toxin of diphtheria. Undoubtedly the best of the new lectures is Number XXII. "The Problem of the Solitary Child." His presence amongst our American cousins across the Pacific is well known and it is increasingly evident he is by no means unknown in Australia. "Negativism" is the fashionable word in connexion with this subject and it is discussed in a masterly way in this chapter.

The new lecture on abdominal pain is a valuable one. When referring to appendicitis he states "pain is the earliest symptom—that it is usually experienced in the epigastrium and only later settles into the right iliac fossa and that it is rarely of great severity except in the nervous child."

The other lectures are moulded on those given in former editions, new material being added; so much is this so that many are practically new. Notably that on cœliac disease is instructive. It is a pity that Dr. Hutchison with all his erudition could not coin a better name. Anyhow it ought to satisfy the most exacting patient. But when one considers the mutilation that happens to simple words like "bronchitis" and "enteric fever" one almost trembles to think what "cœliac" will become. This disease was first accurately described by Gee, of "Barts," promptly forgotten for years, redescribed by Cheatle and discovered for the third time by Professor Herter of New York. Gee in his wisdom did not venture on a probable cause, Cheatle considered it due to insufficiency of bile secretion and Herter to a specific type of microorganism which by the way has not been identified. Abnormal flora are not uncommon in the intestinal canal and Koch's postulates have yet to be fulfilled.

His remarks on chorea are explicit and his notes on the treatment by rest alone are much needed. He recounts the statement by Barlow that a paper could be written on the "Diseases Produced in the Treatment of Chorea." When the arsenical and chloretone poisoning and the intoxication induced by very large doses of salicylate, which sometimes results from excessive medication are considered Barlow's sarcasm is seen to be well timed. In the Southern Hemisphere it is generally admitted that clinical pulmonary tuberculosis is uncommon in young children whereas in the temperate zones of Europe it is frequently maintained by Australian workers to be fairly common. That is the prevalent belief. It is with surprise therefore that we read while he discusses cough and wasting in the dyspepsias "pulmonary tuberculosis is a rare disease in children" and again in respiratory diseases "phthisis as it occurs in the adult is practically unknown in children below the age of puberty."

It is impossible even to hint at all the good things in this book which will be found to be of service to the newly qualified and others. The greatest part of the practice of the newly qualified will be amongst children and successful treatment will be an important element in attaining a good professional standing.

[1] "Lectures on Diseases of Children," by Robert Hutchison, M.D., F.R.C.P.; Fifth Edition, Revised and Enlarged; 1925. London: Edward Arnold and Company. Demy 8vo., pp. xii. + 459, with illustrations. Price 21s. net.

ELEMENTARY THERAPEUTICS.

HERETOFORE everything emanating from the pen of that accomplished clinician and lucid writer Dr. Robert Hutchison, Physician to the London Hospital, has been read with pleasure and profit and in his latest work entitled "The Elements of Medical Treatment" we have not been disappointed.[1]

The plan of this handy book is founded on an annual course of lectures on elementary therapeutics delivered at the "London" on the principles of therapeutics and their practical application. They were originally intended as a guide to senior students in the medical wards, but can also be read with profit by junior practitioners in the evening after their daily rounds of practice. In this concise book they will find useful tips to rectify any occasional slip made in their daily work.

In the first six chapters general principles, fever, pain, insomnia, constipation and diarrhœa are described clearly and these are followed by others on heart failure, bronchitis, anæmia, dyspepsia and other disorders met with in everyday practice.

The dominant feature all through this useful little book is a mild conservatism, cautioning the senior medical student against too up-to-date methods on the one hand and inactivity on the other. The author specially emphasizes the fact that the patient has to be treated and and not the disease, so that his individual tastes and distastes have to be duly considered. Hutchison likens the medical man to a lawyer "who is holding a watching brief" for the patient, giving him confidence that all is going well and that the doctor is quite ready to meet any emergency that may arise.

His remarks on medicines are well timed. Our forefathers used them too much and the present generation too little. The effects of the drugs that may be used, ought to be known intimately and the drugs should be administered in sufficient doses. In his sagacious remarks on drugs he repeats a quotation he has already given in one of his former works: "They sometimes cure, often relieve and always console." In reference to this it must never be forgotten that the great majority of new graduates, unless they are blessed with means to wait for a junior surgical appointment or to attempt the higher flights of scientific medicine, will have to join the great army of general practitioners and to do this well they will have to be versed in the information that this little book gives in an authoritative way.

[1] "The Elements of Medical Treatment," by Robert Hutchison, M.D., F.R.C.P.; 1926. Bristol: John Wright and Sons, Limited. Crown 8vo., pp. 170. Price: 7s. 6d. net.

MENTAL DISEASES.

"THE CLINICAL STUDY OF MENTAL DISORDERS" appearing in the form of a small book of seventy-nine pages, is the title of the Presidential Address delivered at the Eighty-fifth Annual Meeting of the Royal Medico-Psychological Association in July, 1926, by Lieutenant-Colonel J. R. Lord.[2]

[2] "The Clinical Study of Mental Disorders," by Lt.-Colonel J. R. Lord, C.B.E., M.B., M.R.C.P. (Edin.); 1926. London: Adlard and Son and West Newman, Limited. Royal 8vo., pp. 82. Price: 6s. net.

In his address Dr. Lord summarizes the position of the present day study of psychiatry and also urges the necessity for an increased activity in this branch of mental science, particularly in the direction of research work and team work in examining individual patients. The book will especially appeal to psychiatrists attached to State mental hospitals. The first few pages are devoted to explaining the aims and objects of the Royal Medico-Psychological Association, the work it has performed in the past and the work it is performing at the present day. The author explains how the cleavage between psychiatry and general medicine came about. It was because the early reformers like Pinel, Esquirol, Tuke and others were so disgusted with the "apathy, prejudice, ignorance, callousness and even brutality displayed by the medical practitioner in those days in regard to the care and treatment of the mentally afflicted—an attitude in keeping with that of the public generally." "Psychiatry has had to fight an uphill fight for the recognition of the humane principles upon which it is founded." The author discusses and emphasizes the importance to psychiatry of the sciences of heredity, psychology and experimental psychology. The different schools of psychology and the relationship of neurology to psychiatry are explained in masterly fashion. Out of seventy-nine pages Dr. Lord occupies twenty-five in explaining and advocating team work as a substitute for the present day method of apportioning the work in Government mental hospitals. He considers that the chronic insane could be looked after by general practitioners and that the recent and curable conditions should be reserved for the experienced psychiatrists.

To adopt the author's suggestions would mean a complete breakaway from the present customs, but it would be welcomed by all medical officers attached to State Government mental hospitals.

CARDIAC DISEASE.

CARDIAC disease is studied from an unusual angle by Richard C. Cabot in "Facts on the Heart."

Its conclusions are based wholly on cases which came to necropsy; 1,906 conditions decisively diagnosed *post mortem* are correlated with the clinical records. The analysis of these must have meant a great deal of time and labour and the book will always serve as authoritative evidence.

Generally speaking the "facts" are not new, but are marshalled with succinctness and dogmatism and clarify our views for a fresh basis of discussion.

Many patients have imaginary heart disease, sometimes self-diagnosed because of faintness, palpitation, pain *et cetera* or mistakenly labelled by their medical attendants with far reaching results to the individual concerned.

The commonest lesion in the series was the result of hypertension, accounting for 77%; rheumatic valvular disease comes second and is twice as common as syphilitic aortitis. Out of 4,000 autopsies no less than 38% revealed important cardio-vascular lesions. In the 1,906 cases only 25% produced heart failure.

Rheumatic fever, syphilis and hypertension account for 90% of genuine heart disease and after middle age the latter is the predominant lesion. It appears that the amount of fatal rheumatic heart disease has diminished in the last twenty years.

Out of 107 patients with mitral stenosis nearly 40% died without dropsy, succumbing from other conditions, such as cancer, pneumonia *et cetera*.

Mitral regurgitation is regarded as such a rarity that it should not be considered a clinical entity, only seven cases were found in 4,000 autopsies. Cabot says it cannot be diagnosed in life; yet it is the commonest diagnosis now made by physicians. It is possible that the disparity is due to the fact that atonic dilatation of the mitral orifice would not be manifest after death.

He also tilts at the clinical diagnosis of myocarditis and holds that this label is no longer justifiable. Myocardial degeneration is, we think, what is meant and is a useful comprehensive term.

Another fact which needs stressing, is that only 14% of patients with mitral stenosis have small hearts. It is high time that the teaching of smallness of the left ventricle as an important sign in this condition was dropped.

Presystolic mitral bruits are often missed, because the heart is not stirred up by exercise; but in our experience the bruit most frequently overlooked, even by experienced practitioners, is the mitral diastolic; yet it is very important as giving evidence of old standing stenosis and it persists when the presystolic has gone because of fibrillation.

The largest hearts in the series were the result of pericarditis and adhesive mediastinitis; aortic regurgitation takes second place. Arteriosclerosis and chronic nephritis *per se* are not important causes of enlargement, but hypertension is. Increased work for the heart muscle is regarded as the cause of enlargement through the factor of increased peripheral resistance. Physical exertion will not cause enlargement of the heart, as instanced by the fact that the hearts of "Marathon" runners repeatedly examined, year by year, after the annual twenty-five miles run ending at Boston, Massachusetts, have never shown evidence of hypertrophy or of dilatation (page 421).

American cardiologists in recent years emphasize the syndrome of coronary thrombosis and cardiac infarction as a cause of severe and often fatal angina. As patients may vomit, complain of distension and have epigastric pain, they may mistakenly be thought to suffer from indigestion; or from an abdominal emergency with a corresponding rise in the surgeon's mortality statistics.

Angina in general has no constant anatomical basis. In an analysis of 138 cases there was coronary narrowing without angina in 94, with angina in 33 and angina without coronary narrowing in 11. Syphilitic disease of the aorta may be latent for twenty years, but is usually fatal in two years of its recognition. Enough comment has been made to indicate that this is a valuable reference book. Case histories and autopsy findings are given in great detail with the clinical and anatomical diagnoses contrasted. These could have been compressed with advantage and the *verbatim* remarks of bystanders would not be missed. The author does not recommend the book to be read right through; indeed this would be heavy going if one waded through all the case histories.

The book represents a monumental undertaking and will long remain as a rich mine which will well repay intensive delving.

[1] "Facts on the Heart," by Richard C. Cabot, M.D.; 1926. Philadelphia: W. B. Saunders Company; Melbourne: James Little. Royal 8vo., pp. 781, with illustrations. Price: 35s. net.

ELECTROTHERMY.

"ELECTROTHERMIC METHODS" by J. D. Morgan is a small work devoted to this special subject in which an attempt is made to give in rather terse and simple language an idea of the principles of treatment, apparatus and methods of application.[1] For the student who is not familiar with this subject it serves as an elementary introduction.

The matter is treated very simply, contentious discussions are avoided and no undue optimism at the expense of other methods of treatment is shown. It is rightly insisted upon that in the treatment of various neoplastic lesions other methods of treatment should be considered where indicated, such as surgical removal in various ways and the use of X rays and of radium. A few conditions which can scarcely be regarded as neoplastic, are also included, such as the application of endothermy to cases of stricture of the œsophagus, the removal of tattoo marks, tuberculosis of the skin, chronic ulcers, carbuncles *et cetera*, but a fair proportion of space is given to the treatment of such conditions as carcinoma of the antrum, cancer of the bladder, breast *et cetera*.

On the whole, this little book serves as a useful elementary introduction to the study of electrothermic methods.

[1] "Electrothermic Methods in the Treatment of Neoplastic Diseases," By J. Douglas Morgan, B.A., M.D.; 1926. Philadelphia: F. A. Davis Company. Post 8vo., pp. 172, with illustrations. Price: $2.50 net.

The Medical Journal of Australia

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The Exordium.

The College of Surgeons of Australasia has set itself an important, albeit a difficult task. The Founders have determined to raise the standard of practice of surgery and to contribute to the progress of surgical science and technique. The practice of an honourable profession demands the adherence to a set of strict rules of conduct. Over twenty-four centuries ago the great Hippocrates found it necessary to enjoin his brother practitioners to fashion their behaviour according to the highest ideals. He recognized that the relationship that must exist between a physician and his patient, is of the most intimate character and he warned his contemporaries and those who were to follow him, of the necessity to honour the trust. Medicine of the fifth century before Christ and medicine and surgery of today depend on the same fundamental principles. There has been no change in human nature; no change in human foibles and frailties. As Hippocrates had reason to draft his oath to which honourable physicians were required to subscribe, the College of Surgeons of Australasia has deemed it essential that its fellows and members should sign an exordium. Experience has shown that it is necessary to repeat again and again the warning to doctors concerning offences of a professional nature. Hippocrates attempted to define these offences as they presented themselves in his time. The Founders of the College have been content to demand a maintenance of the high traditions of the profession. They have left it to the knowledge and understanding of the members of the profession to interpret the unwritten rules of conduct that should govern the lives of every surgeon. From time to time questions are asked whether behaviour of this or that kind is right or wrong. The inquirers look at these problems from the point of view of the literal interpretation of some formulated rule. In the world at large conduct is determined by laws and custom. Offences against the former are punished if evidence can be adduced that the law has been technically broken. People are careful to conform to conventions and permit their conduct to be governed by rules dictated by habit rather than by a wide interpretation of what is right and what is wrong. The word ethics is derived from the Greek ἦθος which means custom. In dealing with the relations that should exist between doctor and patient we would fain avoid this term and demand the substitution of honourable observance of an implicit trust. The patient seeks the aid of a physician or surgeon. That patient trusts his medical adviser with his personal secrets, with his worldly goods and with his very life. An unscrupulous medical practitioner could abuse this trust in a thousand and one ways. He is given opportunity of carnal knowledge of his female patients; no one but a scoundrel would make use of these opportunities. He has it in his power to injure the patient in the eyes of a neighbour by divulging information gained at the bedside; to do so, would be a heinous crime. He can be negligent in his care of his patient or he can undertake treatment without the possession of sufficient experience, knowledge or skill; there is but a hair breadth of difference between this form of practice and murder. He is in a position to exploit his patient to his own pecuniary advantage; no mean pickpocket is so contemptible as the medical practitioner who is guilty of this offence. In November of 1925 Dr. Norman McArthur started a very fruitful campaign against the common practice of dichotomy. He performed a signal service to the medical profession by directing attention to some of the habits that had insinuated themselves into the professional lives of certain practitioners. From the correspondence that followed the publication of his letter and of editorial articles, it became evident that some members of the medical profession sought for a written rule and considered that it was quite permissible to evade this rule by the subterfuge of a strictly literal interpretation. The fellows of the newly formed College of Surgeons of Australasia have to show the younger and less experienced surgeons by practice and precept how each individual can determine for himself what is meant by dichotomy or the splitting of fees. A trite

definition should not be attempted. If it is wrong for a surgeon to hand over to the introducing general practitioner a portion of the fee paid to him by the patient for the performance of an operation, it must be equally wrong for the surgeon or general practitioner to be party to any financial arrangement not disclosed to the patient whereby the money paid is distributed in a manner other than that intended by the patient. It does not matter whether the general practitioner received one-half or one-quarter or one-tenth of the fee charged for the performance of the operation. The fact that the patient is paying two persons when he intends to pay one is immoral. Moreover, the retention or reception of even a small part of the surgeon's fee by the general practitioner must be regarded a secret commission, a bribe to the general practitioner to recommend the particular surgeon on a future occasion. It has been stated before, but the thesis must be repeated, that a medical practitioner's behaviour in this and other respects must be guided not by words, but by the conscience of the individual. The patient's trust in his medical attendant is a sacred thing. It should be honoured, not because of the risk of penalty if an offence be discovered, but because each member of the medical profession should place honour before personal advantage.

Current Comment.

PNEUMONIC PLAGUE.

PLAGUE pneumonia may be either primary or secondary. Its course may be described as acute, fulminating and lethal. It is generally taught that the primary type occurs in two forms, a broncho-pneumonic form and a more extensive, consolidated, lobar form with bronchitis. Diagnosis may be difficult and infections are frequently not recognized until *post mortem* examination is performed. Secondary pneumonia complicating plague may arise from emboli or from the aspiration of infected material.

The question of the mode of entry of the infecting organism has been a matter of some controversy. It is important, not only in regard to plague, but in its bearing on other pulmonary infections. Textbook reference to this aspect is scanty and hence students of the subject will welcome the appearance of a treatise on pneumonic plague written by Dr. Wu Lien-Teh and published by the League of Nations. Dr. Wu Lien-Teh is qualified to speak with authority on plague. He has made numerous contributions to the literature of the disease; moreover he is Director of the Manchurian Plague Prevention Service and he was Chairman of the International Plague Conference at Mukden in 1911. In the course of his work he points out that at least three different types of change have to be distinguished, a lobular and a lobar form, as already mentioned, and what he calls a pulmonary form, characterized by absence of any definite infiltration. He holds that there may be transitory stages between these forms. In these circumstances it is not be wondered at that disagreement exists among authors as to whether the lobar or the lobular form is characteristic of pneumonic plague. Dr. Wu Lien-Teh, however, holds strong views on the mode of infection and in accordance with these views the lobar form represents an advanced stage of what was originally a lobular type of infection. Dr. Wu Lien-Teh holds that the original infection in pneumonic plague is usually a direct respiratory one. This view is opposed to that of Koulecha who claims that plague pneumonia is due to a hæmatogenous infection, the original portal of entry being in the upper part of the respiratory tract, tonsils, trachea and so forth. In a matter of this kind the histological findings are often a determining factor. Dr. Wu Lien-Teh points out that in the earliest stage numerous bacilli are found about the bronchioli, in the peribronchial spaces and in adjoining alveoli. In the latter they frequently encircle the bronchioli. They are also present in large numbers in the interlobar septa and beneath the pleura. Strong has pointed out that few bacilli are present in this stage in the blood vessels and their neighbourhood. Dr. Wu Lien-Teh attaches considerable importance to this observation. He quotes a case, reported by Jettmar, of a Russian peasant who committed suicide while suffering from the early stages of pneumonic plague. In the right lung in this instance hepatization of the middle lobe, with confluent foci in the upper lobe and early engorgement, were found. Histological examination of the areas in which the changes were early, revealed plague bacilli scattered throughout the alveoli and in the more advanced foci organisms were seen to be concentrated near the alveolar walls adjacent to small vessels. No plague bacilli could be seen in the capillaries. Other blood vessels were apparently free from bacilli. Organisms, however, could be seen forming dense clusters in the lymph spaces of the adventitia and media of these vessels. Koulecha lays great stress on this last point and holds that the bacilli can extend from the perivascular lymph spaces to the adjacent alveoli and cause an inflammation. Dr. Wu Lien-Teh admits that the lymphatic channels are early invaded by the bacilli and that it is possible that the perivascular spaces may provide passage for the lymph and thus become densely filled with bacilli. He adds that he is far from asserting that all the pneumonic areas found in individual cases must be due to a direct respiratory infection. He regards it as possible that some of the areas are secondary in nature, infection being caused through

the lymph or blood channels. This question in his opinion is still an open one.

Histologically a catarrhal inflammation is usually noticed in the trachea and bronchi. Dr. Wu Lien-Teh and Dr. Fujinami have described necrosis or destruction of the epithelium and the occurrence of plague bacilli in the surrounding tissue at points where the epithelial cells have been destroyed. Koulecha described foci at which both the epithelium and subepithelial layer are permeated by plague bacilli which form egg-shaped agglomerations in the cylindrical epithelium and are very numerous in the submucous layer; the bacilli permeate deeply almost to the cartilages, surrounding and penetrating the blood vessels; the bacilli are seen also round the deep mucous glands which they invade through the excretory ducts; groups of bacilli are noted along these ducts. Dr. Wu Lien-Teh and Dr. Fujinami have studied the changes in the walls of the bronchi and hold that the destruction of the mucous membrane is brought about by an invasion of the virus through the wall of the bronchioli rather than from within the wall. Dr. Wu Lien-Teh tabulates the findings of twenty-one observers in regard to the condition of the bronchial glands. He concludes from this evidence that the bronchial glands may be little changed or not at all. It is to be noted that in some instances in the table the indefinite and inadequate term "markedly changed" is used. He points out that no periadenitis occurs such as is seen in bubonic plague. It may be noted that according to Koulecha the bacilli do not succumb with the phagocytes in the glands, but the cells disintegrate and the bacilli multiply. In his discussion on the mode of entry of plague bacilli Dr. Wu Lien-Teh admits the possibility that the infection may pass the lymphatic channels into the blood stream without leaving any trace at the site of entry, but he points out that this ought to lead to septicæmic and not to pneumonic plague. He also asks the pertinent question as to why there should be time for the development of lung changes, but none for the development of maxillary buboes. He also wants to know why the bronchial glands display such pronounced reactions as compared with the tonsils and cervical glands.

From the foregoing there naturally arises the question of bacteræmia in pneumonic plague. Dr. Wu Lien-Teh quotes may observers who have reported pneumonic plague without bacteræmia and he dismisses the evidence of the majority as inconclusive. He accepts, however, the findings of two workers, Tsurumi and Connal, who failed to find a bacteræmia by both microscopical and cultural tests. It will be granted that the possibility of the occurrence of such a highly virulent infection as pneumonic plague without an accompanying bacteræmia is most unlikely. Negative evidence on such a subject must be accepted, if at all, with extreme caution.

In considering this subject the question will naturally be asked as to how epidemics of pneumonic plague arise and whether a condition of plague septicæmia may become plague pneumonia. In regard to the first of these points it is generally agreed that pneumonic plague arises from secondary pneumonia in patients suffering from bubonic plague. Some observers, however, have maintained that it may arise directly from plague infected rodents. Dr. Wu Lien-Teh quotes observations of several workers and puts forward their views. He refers to several outbreaks of pneumonic plague that were "original." Infections under laboratory conditions are frequently of this nature. Dr. Wu Lien-Teh points out that in most instances on record the diagnosis had not been confirmed by necropsy and that often it has been based on the clinical history alone. Although he does not know of a single instance in which a thorough histological investigation was carried out, he admits the existence of such cases, but adds that they are exceptions and not the rule. In regard to the possibility of a septicæmic form of plague becoming pneumonic he refers to an epidemic in which a stage of septicæmic cases intervened between bubonic and pneumonic forms. A study of specimens from so-called septicæmic plague revealed in "practically all" the presence of slight pneumonic changes. He thinks that in this epidemic probably the first bubonic infections led directly to plague pneumonia.

It will thus be seen that there are several anomalies to be explained before the whole story can be regarded as told. Dr. Wu Lien-Teh has put forward a good case in support of his pulmonary origin of primary pneumonic plague. Whether he has proved it is another matter. The absence of the involvement of the maxillary glands if the tonsil receives the first infection, certainly requires some explaining. If the infecting organism gains access to the blood stream through the wall of the trachea or bronchi and then produces its lesions in the depths of the lung, the lung condition is not a primary but a secondary pneumonia. In any case it is not impossible that the infection may be conveyed to the lung by more than one route.

In conclusion it must be pointed out that Dr. Wu Lien-Teh deserves congratulation for his comprehensive and valuable work and the League of Nations for the way in which it has published the book.

THE HARMSWORTH MEMORIAL RESEARCH FUND.

THE attention of our readers is directed to an advertisement of the Harmsworth Memorial Research Fund which appeared in the issue of last week. The Committee of Trustees and the Scientific Committee have undertaken to collect all the available information from the literature on ulcerative endocarditis, to organize a close study of the clinical manifestations of this disease where and when it occurs and to encourage research of a promising nature. It appears that workers in any part of the world may receive financial support or subsidy for any chemical, biological or immunological work that will increase knowledge concerning the disease. The Trustees propose to exercise their discretion in such a manner that investigators will be remunerated in proportion to the value of their contributions.

Abstracts from Current Medical Literature.

SURGERY.

Cholelithiasis Resembling Renal Disease.

RUPERT S. CORBETT AND CARLETON B. PIERCE (*Surgery, Gynecology and Obstetrics*, October, 1926) report two cases of a clinical type of cholelithiasis resembling renal disease and suggest that such cases are not uncommon. The symptoms were (i.) a sense of weakness and lack of ability to work becoming more severe, (ii.) a sudden onset of pain, brought about by a recrudescence of an old inflammatory condition of the gall bladder, (iii.) recurrent attacks of colic requiring the administration of morphine. The renal symptoms predominated, but the findings in the gall bladder were more advanced than those in the uro-genital tract. In addition the urinary symptoms cleared up after operation on the gall bladder. The authors conclude that there is a definite clinical type of cholelithiasis resembling renal disease. They found also that the X ray finding of gall stones was enhanced by the use of tetra-iodo-phenolphthalein not due to the absorption by the stones, but to the contrast afforded by the background of bile and of bile salt. These cases were associated with large gall stone formation, a moderate degree of pathological change in the wall of the gall bladder and a shadow of the stones after the oral administration of tetra-iodo-phenolphthalein. The authors hold the view that gall stones are rather of chemical origin than of infective origin and that therefore gall stones might be considered to be the cause rather than the effect of cholelithiasis.

Gastric and Duodenal Ulcer.

KARL A. MEYER AND WILLIAM A. BRAMS (*The American Journal of the Medical Sciences*, April, 1926) give the result of a study of a series of sixty-two cases of acute perforation of gastric and duodenal ulcer. They find that every one of these cases occurred in the male and none in the female. About 60% of the patients were under forty years of age and about 32% were thirty years old and younger. The cause of the actual rupture was often unaccountable and did not necessarily follow any unusual exertion or over-distension of the stomach. In fact perforation occurred during sleep in five patients. The clinical picture was in most cases clear cut, so that 85% of correct diagnoses were made prior to operation, but the clinical features were often obscured later by resulting peritonitis and meteorism. The location of the maximum pain and tenderness was then often in the right lower quadrant of the abdomen instead of in the epigastrium. The presence of free air in the peritoneal cavity on fluoroscopic examination proved of great help in the diagnosis both in the early and later stages of perforation. The authors state that vomiting always occurred at the onset of the pain and was present in all but six cases, but in no case was hæmatemesis present. No difference was evident in the mortality rate of gastric as compared with duodenal ulcer. The total death rate was about 29% and rose rapidly with delay before operation, the authors agreeing with Steichele and McCreery who hold that the general mortality rate is about 6% if operation is undertaken within twelve hours of the onset and about 86% when there is a delay of fourteen hours or longer.

Brain Tumours.

WALTER E. DANDY (*Northwest Medicine*, December, 1926) discussing the diagnosis and treatment of brain tumours, says that all lesions become more common as acquaintance with them grows. Appendicitis, at first unknown, passed through a stage when it was considered rare, now it is a common ailment. This is true of many lesions. Brain tumours are at present in the rare stage. Recent work has, however, shown that not only are they amongst the most frequent tumours of the body, but during the second to the fifth decades they are amongst the most common afflictions of the central nervous system. Early and accurate diagnosis and early and efficient operation are all important, but in addition there is another great factor—localization, which is the most difficult phase of a complex neurological problem. Without this knowledge operative results must be poor and explorations for brain tumours have been so discouraging that except when the localization seems clear, decompression has become more or less routine. The great hope lies in early diagnosis. A tumour should be suspected when any sign or symptom referable to the central nervous system makes its appearance. By cerebral pneumography early diagnosis and localization are possible. The treatment consists of complete removal when their nature and localization make this possible, when this is impossible the maximum decompression for palliation should be performed. In regard to cerebral pneumography, when there are localizing signs, the localization is automatically made, but the majority give rise to general pressure symptoms only. It is in these cases that cerebral pneumography is of such value.

Intracranial Suppuration.

HARRY L. PARKER (*Northwest Medicine*, December, 1926) after briefly sketching the history and general considerations of intracranial suppuration deals in detail with its ætiology, pathology and clinical manifestations. Whilst differentiation of the various suppurative conditions within the cranial cavity may be well-nigh impossible, there are certain salient and important features. Suppurative *otitis media* with extradural abscess may produce signs very like those of cerebral abscess, but careful examination and surgical exploration of the ear will cause a subsidence of symptoms and the diagnosis will then be clear. Diffuse suppurative leptomeningitis is differentiated by rigidity of the neck, delirium and restlessness, a rapid pulse, high fever and a cloudy, purulent condition of the spinal fluid. Sinus thrombosis has its pyæmic symptoms and a blood culture is usually productive of organisms. In contrast with these phenomena are the dull, drowsy, slow mentality, the slow pulse with normal or slightly elevated temperature, the optic papillœdema, vomiting and headache, the area of tenderness to local percussion on the skull and lastly, the specific localizing cerebral or cerebellar signs of abscess of the brain.

Mortality Following Gall Stone Operations.

W. ANSCHÜTZ (*Deutsche Medizinische Wochenschrift*, October 29, 1926) reviews his results in seven hundred and twelve cases of cholelithiasis following operation. Four hundred and sixty-four patients were operated upon during an interval between attacks and two hundred and forty-eight shortly after the onset of symptoms. The mortality in the interval operations was 1·7% for all ages below sixty and 5% above that age. The mortality was 18·9% for patients operated upon in the presence of fever and jaundice. Fifty-one patients were operated upon because of peritonitis. Those done within forty-eight hours of the onset of symptoms had a mortality of 7·8% as compared with 15% to 20% for operations done at later periods. Investigation of three hundred and thirty patients after operation showed that 70% were well, 15% to 20% were improved and 10% to 12% unchanged. Failure was frequently due to recurrent cholangitis or chronic pancreatitis, adhesions, concurrent gastric or duodenal ulcer and appendicitis. In addition there is a group of patients with spastic nervous symptoms. Modern methods of diagnosis should enable the surgeon to exclude this group from unnecessary and useless operations. Medicinal treatment is indicated for practically all acute forms of cholelithiasis followed by operation after complete examination by duodenal sound and cholecystography for the exclusion of extraneous causes.

Pancreatic Tumours.

M. EINHORN (*Deutsche Medizinische Wochenschrift*, October 15, 1926) review the histories of nine patients with pancreatic tumours seen by him in the last two years. The main symptoms were loss of appetite, epigastric pain and vomiting. Pain is felt in the left hypochondrium and radiates towards the back. Malignant tumours unlike innocent ones manifest no remission of symptoms. Test meals with malignant tumours reveal achylia and subacidity, while innocent tumours produce hyperchlorhydria. The bile is

thick and full of cholesterin crystals and pus cells. Jaundice appears when the head of the pancreas is involved and is an important symptom. The differential diagnosis between chronic cholecystitis and pancreatitis is assisted by tests revealing absence or diminution of trypsin ferments. Cholecystectomy is indicated for all cases of cholecystitis with or without stones, provided that the pancreas is not affected. The gall bladder should not be extirpated, if the pancreas is involved. In these cases a fistula should be formed or an anastomosis made between the gall bladder and stomach or duodenum. Metastases contraindicate any operative interference.

Acute Pancreatitis.

DIGBY CHAMBERLAIN (*The British Journal of Surgery*, January, 1927) points out that a correct diagnosis is not made in cases of acute pancreatitis, unless the surgeon keeps the condition constantly in mind. He considers the clinical aspect briefly and discusses the pathology. He emphasizes the severity of the symptoms and the acuteness of their onset. He draws attention to two symptoms in particular. The first is cyanosis and the second is the discoloration in the flank, described by Grey Turner and due to a direct peritoneal digestion by the pancreatic ferments. Twenty-one patients with this condition were treated during a ten year period at the General Infirmary at Leeds. Eight of the patients died. Three were not operated upon and two of them died. In thirteen instances treatment consisted in drainage of the lesser sac of the peritoneum and exploration of the pancreas with the finger. Five of the thirteen died. In the treatment of the remaining five patients submitted to operation a tube was put into the gall bladder in addition to the drainage of the lesser sac. One of these five patients died. The author suggests that the best method of draining the lesser sac is by resecting a portion of the tenth rib on the left side in the mid-axillary line. In discussing the pathology of the condition, he points out that there are five possible causes for the changes which are found. They are: (i.) an autodigestion of the pancreas, (ii.) an infection of the pancreas, (iii.) hæmorrhage and digestion of the clot, (iv.) pancreatic calculi and (v.) a combination of causes (i.) and (ii.). It is obvious that the pancreatic ferments are concerned in the process. Trypsinogen can be activated by enterokinase or by an infection, but not by the action of normal bile. The view that acute pancreatitis is due to regurgitation of intestinal contents bringing organisms to the pancreas has been abandoned. If this regurgitation does not occur, trypsinogen cannot be activated by the *succus entericus* and must be activated by infection. Hæmorrhage can be excluded by the fact that acute pancreatitis does not supervene when bleeding occurs as a result of trauma or scurvy. Acute pancreatitis has not been observed in association with calculi. The occurrence of cyanosis is probably the result of a septicæmia and this is in favour of an infective causation. The author discusses the possible sources of the infection and reports that in four cases he has recovered a hæmolytic streptococcus from the bile at the time of operation. In three of these instances the gall bladder had a healthy appearance. He refers to the fact that Deaver and Mauderet have emphasized the close anatomical connexions between the lymphatics of the gall bladder and the pancreas. He concludes that infection travels to the pancreas by way of the lymphatics.

Osteochondritis or Epiphysitis.

A. C. CHRISTIE (*The Journal of the American Medical Association*, July 31, 1926) discusses osteochondritis. Under this head he includes disease affecting several long bones and the vertebræ. These diseases tend to occur at certain ages during the development of the skeleton. They may have a common ætiology though the cause is not known. *Osteochondritis deformans juvenilis coxæ* has been variously known as Legg's, Calvé's and Perthes's disease; in this the femoral head becomes flattened and the neck of the femur broadened. Separation of the tibial tubercle occurs in boys between thirteen and fifteen years of age, Osgood's and Schlatter's names have been given to the disease. Köhler's disease of the tarsal scaphoid bone is characterized by pain in children between three and ten years of age; X ray examination reveals a smaller bony nucleus and increased density of the scaphoid. Köhler's disease of the second metatarsus has had many names; it occurs in boys mostly and the ultimate picture resembles that of *arthritis deformans;* it has been called *arthritis deformans juvenilis* of the second metatarsophalangeal joint. Vertebral epiphysitis constitutes 83% of so-called idiopathic posterior and lateral spinal curvature of children according to Buchanan who collected sixty-four cases. The disease occurs between ten and twenty years of age and the diagnosis is largely radiological, a blurring of the bodies and epiphyses of the vertebræ being found. Similar conditions to these also have been reported in the epiphyses of many other bones. It is probable that they are all the same pathological entity modified by their location.

Referred Pain in Gall Blader Disease.

WALTER I. AKANA, HORACE GREELEY, JUNIOR, AND CHARLES E. FARR (*The American Journal of the Medical Sciences*, January, 1927) have analysed the referred pain in four hundred and twenty-four consecutive cases of gall bladder disease. Henry Head in 1893 recognized two types of pain of visceral origin, one in the organ itself which was more that of discomfort and another on the surface of the body which was really a painful sensation. Pain in gall bladder disease according to Rolleston is due to two factors, first the acute inflammation of the gall bladder *per se* and second muscular spasm set up by the presence of a calculus in the duct. In ten cases of the series investigated by the authors the patient had no pain. In 78·4% of the cases the pain was found in the right hypochondrium or in the epigastrium. The pain radiated to the shoulder and the back in 27·9%. The absence of pain in the ten patients was regarded as probably due to a failure of or insufficient irritation of the biliary tract to cause muscular spasms.

Strangulated Hernia in an Infant Five Days Old.

S. J. H. GRIFFITHS (*The British Journal of Surgery*, January, 1927) reports the occurrence of strangulated hernia in an infant five days old. Fraser has advanced the belief that the early incidence of strangulation is related to an attempt at natural closure of the *processus vaginalis*. The local evidence of the attempt is a fibrous ring which is the constricting factor producing the strangulation. The author holds that his case tends to support Fraser's view. The child appeared normal at birth. It subsequently vomited several times and on the fourth day it was noticed that the testicle was swollen. At operation the hernial sac was found to contain 22·5 centimetres (nine inches) of somewhat lustreless, discoloured and distended small gut. The testicle was swollen and œdematous. The neck of the sac was divided with difficulty. Recovery was uninterrupted.

Carcinoma of the Ileum.

J. J. ROBB (*The British Journal of Surgery*, January 1927) reports a case of carcinoma of the ileum. The growth occurred in a woman, aged sixty-four years, and was found in the form of a ring shaped constriction at about the middle of the ileum. The author points out that this situation approaches that region of the small intestine which might be termed almost immune to cancerous growth. From his perusal of the literature he concludes that carcinoma of the small bowel is about twice as common in men as it is in women and rather more than twice as common in the ileum as in the jejunum. He points out that the outlook is worst when the growth is situated high up in the small bowel. The tumour on microscopical examination proved to be a highly cellular spheroidal celled carcinoma. The author comments on the fact that carcinoma of the ileum is seldom diagnosed before operation. The preliminary history is generally one of vague discomfort for periods varying from six to eight months. Early lack of evidence is due to the fluidity of the intestinal contents. Pain is absent because there is neither trauma nor infectivity of the bowel contents sufficient to erode the invading growth. For the same reason melæna and its accompaniment, secondary anæmia, are absent.

Medical Societies.

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Children's Hospital, Melbourne, on October 13, 1926, DR. A. P. DERHAM, the President, in the chair.

Syphilis in Children.

DR. ROBERT SOUTHBY read a paper entitled "Syphilis in Children with Special Reference to the Use of Bismuth for Treatment" (see page 357). The paper was illustrated by a number of charts and several patients were shown in order to demonstrate the method of classification which had been adopted and the absence of ill effects from the intramuscular injections.

DR. H. BOYD GRAHAM, after expressing his appreciation of the merit of Dr. Southby's work and paper, emphasized the value of Dr. Southby's classification of children with syphilis and the good results obtained with "Bismol," especially in the older children. These children in Dr. Graham's experience were extremely difficult to treat successfully if the conversion of the Wassermann findings were taken as the standard of success. Dr. Graham considered that "Novarsenobillon" in the dosage outlined in his congress paper to which Dr. Southby referred, showed such splendid results for the younger children that it could not very well be improved upon. In the face of Dr. Southby's results with the older children, however, it would seem that should these "Bismol" results be obtained with a large series of patients, children over four years of age, the subjects of congenital syphilis, whether they had previously been given "Novarsenobillon" without success or not, should receive a course of "Bismol" injections.

The difficulty in connexion with "Novarsenobillon" in the children under the age of four years was that deep subcutaneous injections were liable to be followed in about 5% of instances by painful induration or actual chemical abscess formation. It would seem that with "Bismol" this annoying accident did not happen. Dr. Graham had used "Galyl" made up with 6% glucose and 0·1% guaiacol for a limited period and found that local reactions did not occur and thereafter he had used "Novarsenobillon" with 6% glucose and 0·1% guaiacol which complicated the technique of injection, but overcame the difficulty as to local reactions. Therefore, he would suggest that 6% glucose and 0·1% guaiacol should be put up in one cubic centimetre of water in ampoules for admixture with the "Novarsenobillon" at the time of injection and that this "Novarsenobillon" in glucose should be resumed for routine use in the treatment of children under four years of age.

Dr. Graham then supported Dr. Southby's plea for legislation to make compulsory the serological examination of all the immediate members of a family known to contain at least one syphilitic person and suggested that, as Dr. Southby now had the official status of Honorary Medical Officer in charge of the Venereal Disease Clinic at the Children's Hospital, it was only fitting that he should organize a deputation to approach the Chief Secretary with a scheme for the revision of the *Venereal Diseases Act* already on the Statute Book incorporating this and several other desirable improvements.

With reference to the proposed treatment of the mothers with their children at the Children's Hospital Dr. Graham was wholeheartedly in accord.

Dr. Graham then announced that an attempt had been made to get into touch once more with those children who had been treated by him several years previously and that no instance had yet been met with in which the Wassermann findings had not been sustained.

Dr. Graham then demonstrated the summary charts of forty-four children whose cases were reported in some detail in his congress paper. These charts showed that when more than one gramme of "Novarsenobillon" was given to children of under one year, at the time of the first injection the response to the Wassermann test would change from reaction to no reaction well inside six months and in the case of four children recently reexamined had consistently resulted in no reaction to date, the blood being tested frequently at two independent laboratories, namely, the Melbourne University Bacteriological Laboratory (Dr. R. J. Bull) and the Walter and Eliza Hall Institute for Research (Dr. C. H. Kellaway and Miss F. Eleanor Williams). This included periods of four years and six months (Serial No. 25), five years (Serial No. 38), five years (Serial No. 61) and five years and three months (Serial No. 68). Further, when more than one and a half grammes of "Novarsenobillon" were given to children between one and two years of age previously untreated, equally gratifying results followed and the serum of one child recently reexamined five years and nine months after the first injection still failed to yield the Wassermann reaction (Serial No. 47).

Among those children who came under treatment for the first time when in the third and fourth years of life more than two grammes of "Novarsenobillon" was advocated as the adequate dose and one child recently reexamined six years after the time of the first injection was still perfectly well and yielded no reaction to the Wassermann test (Serial No. 11). Another was equally satisfactory after four years and nine months (Serial No. 16). The results among older congenital syphilitic children treated with "Novarsenobillon" who had previously not been treated were disappointing and did not warrant further comment at present, though only one partial serological relapse had been encountered so far.

In conclusion, Dr. Graham again congratulated Dr. Southby on the successful stage to which he has brought his important investigation into the value of "Bismol" in treatment and supported its continued use for congenitally syphilitic children over four years of age, but he stated that as a result of the passage of time and the fact that no children had yet relapsed that had been reported by him as successfully treated with "Novarsenobillon" he was able with added confidence to advise that "Novarsenobillon," if used in the dosage and manner indicated by him, was capable of ridding a large majority of the babies and many young children of all detectable evidence of the disease, including the reaction of the serum to the modern modification of the Wassermann technique and he felt that if anything this was a guarded statement underestimating the possibilities of treatment with "Novarsenobillon." Whenever possible congenitally syphilitic children should be treated by means of injection of an adequate quantity of a satisfactory preparation in the first year or two of life and this treatment should not be omitted or postponed.

DR. R. L. FORSYTH also congratulated Dr. Southby on his instructive paper and enquired whether "Bismol" was still obtainable for general use and, if not, was there a similar preparation suitable for use in children? Dr. Forsyth was impressed by the absence of local reaction from the injections as this had always been one of his greatest difficulties in the treatment of syphilis in children especially when using some of the arsenical preparations.

DR. DOUGLAS GALBRAITH said how much he had enjoyed hearing Dr. Southby's paper. Some time ago he had had the opportunity of conducting a similar clinic for a year in Glasgow and was particularly interested in the comparison of Dr. Southby's results with bismuth with those he had obtained using two arsenical preparations, "Neokharsivan" and "Sulfarsenol." In the group up to two years the results appeared to be much about the same, but in the older children the bismuth preparations seemed to be much superior; in fact, Dr. Southby's results were very striking. In five children, aged from eight to twelve years, he had obtained failure to react to the Wassermann test after only ten injections. Dr. Galbraith's experience with children of this age, using arsenical preparations, was that it was possible to go on giving injections week after week, up to thirty or forty, before obtaining failure of reaction in the blood. This then appeared to be an important advance in the treatment of congenital syphilis and confirmed the observations of others that bismuth was very efficacious in the more chronic cases.

With reference to the treatment of mothers, if this could be done with their babies at the Children's Hospital, it would be much easier to control the cases and Dr. Galbraith was sure that more mothers would come along. If a mother was attending an adult hospital weekly for injections, the neighbours became inquisitive. On the other hand, weekly attendance with the baby at the Children's Hospital caused no comment. Moreover, it would be a great saving of time to the hard worked housewife.

Dr. Southby had mentioned the absence of symptoms in mothers who yielded a response to the Wassermann test. Leonard Findlay thought that this was due to the infection in the mother being an intrauterine one and the disease more of a toxæmia. Experiments had shown that the symptomatology of syphilis varied with the mode of infection. For example, subcutaneous inoculation of an ape produced a generalized toxæmia and not the usual signs of florid syphilis.

An interesting point was that when the mother's blood and the baby's both yielded reactions, the father's frequently did not yield a reaction. He could recall about six examples of this which he had encountered. Each one denied having had treatment and it seemed possible that in the male at any rate syphilis might often be a self-limited disease which passed through a process of natural cure. In the mother the infection lay in the uterus and it was thus more difficult to eradicate.

With regard to the Wassermann testing, he thought this should be performed free of charge in every case and the charge of five shillings made by the University should be abolished. It would be just as logical to charge for the examination of sputum for tubercle bacilli. Surely this was a function of the Public Health Department and an increased grant might be made to cover the expense. The system in Scotland was a good one. Complete outfits (consisting of a small glass tube with a rubber stopper, history sheet and cardboard box addressed to the Public Health Laboratory) were supplied free of charge, and after taking the blood one could drop the outfit into the nearest pillar box. This saved a good deal of the practitioner's time and, in addition, a fee of two shillings and sixpence was paid by the Health Authorities to the doctor for each specimen sent. This system encouraged the taking of a Wassermann test as a routine and brought to light quite a few unsuspected cases of syphilis.

DR. A. P. DERHAM joined in the general appreciation of Dr. Southby's paper and work. In a series of some hundreds of Wassermann tests carried out on wards of State he had found that a reaction frequently persisted in congenital syphilis after the age of fourteen and even into the twenties, in spite of intensive antisyphilitic treatment. He had carried out one series of checked Wassermann tests, half of the same sample of blood being sent to the Melbourne University and half to the Commonwealth Serum Laboratory. The results were somewhat diverse and a casual observer might conclude that the Wassermann reaction was quite unreliable. A more careful estimate of the findings, however, in the light of the known clinical histories of the twenty patients so tested, including the amount of treatment and the results of still other Wassermann tests, led to the conclusion that the reactions were reliable when weighed carefully in the light of other facts. In treating some hundreds of patients with intramuscular injections of "Muthanol" covering some thousands of actual injections not a single abscess or serious local reaction had been noticed. This work had been done by Dr. C. H. Johnson, Director of the Government Venereal Diseases Clinic, who unfortunately was unable to be present at the meeting. Dr. Johnson had found that the best results were obtained by a judicious alternation of "Muthanol" and arsenical preparations such as "Sulfarsenol" and "Novarsenobillon." Dr. Derham also emphasized the unreliability of the Wassermann test, particularly of absence of reaction during the first few months of life. In spite of the careful routine examination of the gums for the typical blue or black line, several cases of mild bismuth stomatitis had occurred, probably complicating a previously unhealthy mouth condition. In one such case, the patient being a girl of 14, an infective arthritis of one knee had supervened. This rapidly cleared up on removal of the teeth, cessation of bismuth treatment and local treatment of the infected mouth condition. Dr. Derham also strongly supported Dr. Galbraith's proposal that mothers of syphilitic children should be treated at the Children's Hospital at the same time as the children.

DR. JEAN MACNAMARA asked whether Dr. Southby had encountered any children in the clinic who showed signs of hepatic insufficiency and, if so, whether such children were given some form of carbohydrate such as barley sugar before the injections were administered.

DR. BYRON L. STANTON quoted the recent work of Levaditi on the chemistry of the bismuth compounds and stated that when abscesses did occur they were due to the preparation being in a granular and non-diffusible form. With regard to the patient who died shortly after the course of treatment was completed, Dr. Stanton stated that he had examined the kidneys which showed slight traces of bismuth, but a quantitative estimation had not been carried out.

DR. REX HYLTON said that before asking several questions he would like to express his appreciation of Dr. Southby's very excellent paper. He had seen a boy, aged four years, who was able to attend hospital for treatment only once a month as he lived in the country. This child had been given four cubic centimetres of "Bismol" at each attendance and showed no ill effects. He would like to ask whether, in Dr. Southby's opinion, larger doses given at longer intervals would be just as efficient in treatment. He would also like to know whether Dr. Southby had encountered any patients who had become "Wassermann fast" in spite of bismuth treatment. Further, he would like to ask if there was any explanation as to why congenital syphilis should remain apparently latent for as long as ten years and then involve the larynx and clinically the larynx only. He had used "Sulfarsenol" in large doses with good results and thought it would replace other arsenical preparations because of its efficiency combined with absence of painful local reaction.

Dr. Hylton raised the question of diagnosis in some infants with severe septic lesions which were sometimes regarded as syphilitic and yet no evidence could be found to support this either serologically or on *post mortem* findings. He also commented on the number of infants with exfoliative dermatitis whose serum failed to react to the Wassermann test.

DR. D. M. EMBELTON asked whether local reaction after intramuscular injections was due to chemical or mechanical irritation. He also asked whether preparations other than the oily suspension had been used by Dr. Southby.

DR. H. LAWRENCE STOKES said that during his recent experiences abroad he had observed that arsenical preparations were being used very extensively in many clinics and that bismuth was reserved chiefly as an auxiliary line of treatment or for those patients who failed to respond to arsenic. With reference to tests for hepatic efficiency Dr. Stokes said that most of the tests at present in use were far from satisfactory as they were able to reveal only very gross degrees of disordered liver function.

DR. MERVYN STEWART asked would it not be advantageous to use arsenic and bismuth in conjunction since each appeared to be so efficient when used alone? He understood that glucose and guaiacol could now be obtained in ampoules of one cubic centimetre for solution of the arsenical preparations. With reference to extragenital primary infection, Dr. Stewart quoted the case of a boy, aged fifteen years, who had attended the Melbourne Hospital after having had one finger crushed in a rabbit trap. The boy's companion, an old man, had sucked the finger to relieve the pain. An ulcer developed on the finger which proved to be an extragenital chancre and the old man was found to have a perforating ulcer of the palate.

DR. G. A. PENINGTON said he had seen several patients who had remained "Wassermann fast" in spite of treatment with arsenicals and these had not responded to bismuth preparations either.

DR. ROBERT SOUTHBY in reply thanked members for the cordial manner in which they had received and discussed his paper. He congratulated Dr. Graham on the excellent results which had been obtained by using "Novarseno-

billon" and which were shown to be permanent by the persistent failure of response to the Wassermann test over long periods of observation. He did not consider that Dr. Graham's results could be improved upon by any preparation.

Dr. Southby said that he did not wish members to gain the impression that he advocated the replacement of arsenic by bismuth in the treatment of syphilis in children. The present investigation had simply been carried out to determine whether bismuth alone was effective in treatment and he considered that the results justified the conclusion that it was, although the arsenical preparations were more rapid in their action. He thought the ideal treatment was to combine the arsenic and bismuth as suggested by Dr. Stewart and to supplement these with mercury and, in the case of older children, with iodides also.

In answer to Dr. Forsyth's question, he was sorry to state "Bismol" was not being manufactured, but that "Muthanol" was a very similar preparation which gave equally good results and was easily procurable. As to the question of irritation at the site of injection Dr. Southby could not say definitely whether such reaction, when it did occur, was chemical or simply mechanical in nature. He considered that any local reaction after intramuscular injections was due to one of three causes: (i.) Faulty technique, especially if the injection was given too superficially, (ii.) the use of unsuitable preparations or (iii.) intolerance on the part of the patient.

He had used other types of bismuth preparation, such as aqueous solutions and "colloidal" bismuth, but preferred the oily suspension of bismuth hydroxide.

Occasionally, patients were met with who appeared to be "Wassermann fast" in spite of all forms of treatment similar to those quoted by Dr. Derham and Dr. Penington.

Up to the present time no patients had been seen in the clinic with clinical manifestations of liver insufficiency and carbohydrates were not administered prior to the injections.

Although he had always used smaller doses at intervals of a week, Dr. Southby thought it possible that larger doses at longer intervals, as suggested by Dr. Hylton, might be as efficacious since the ultimate result seemed to depend on the total quantity of bismuth used. With reference to the delay in appearance of symptoms of congenital syphilis in some children, Dr. Southby thought this was possibly due to a phase in the activity of the spirochæte which could apparently lie dormant for a long period or else had to pass through a developmental cycle before showing signs of its presence. The localization of the lesions was probably another presentation of the old story of "the soil and the seed." When the infection did become active in these so-called "latent" cases, it was often a region with a comparatively scanty blood supply which became involved, for example larynx, cornea or middle ear giving rise respectively to syphilitic laryngitis, interstitial keratitis and sudden deafness.

The question of severe septic lesions in poorly nourished infants simulating congenital syphilis which had been mentioned by Dr. Hylton, was an extremely interesting one and only recently a very neglected baby of twelve months had been admitted to the Venereal Diseases Ward with numerous "punched out" ulcers on the face and anal region and much destruction of the nasal septum which appeared clinically to be very suspicious of a syphilitic infection. However, the serum of both the child and the mother had failed to react to the Wassermann test and at autopsy there was nothing to suggest syphilis.

Babies suffering from exfoliative dermatitis almost invariably failed to react to the Wassermann test since this condition was not a manifestation of congenital syphilis and these infants, apart from the skin condition, were usually healthy and well developed and showed none of the stigmata such as snuffles, splenomegaly or pseudo-paralysis. It was noticeable that these children often had a delicate "velvety" type of skin and once a small superficial infection commenced, it would rapidly spread and cause the extensive desquamation which, however, was quite different to the peeling of the palms and soles seen in the syphilitic infant.

THE MELBOURNE HOSPITAL CLINICAL SOCIETY.

A MEETING of the Melbourne Hospital Clinical Society was held at the Melbourne Hospital on October 22, 1926, MR. ALAN NEWTON in the chair.

Bronchiectasis.

DR. F. B. LAWTON showed a male patient, aged fifty-two years, who for the past twenty-one years had been a painter by occupation. For a few years prior to this he had been a miner. He had had a chronic cough all his life. In March, 1926, he thought that a small piece of bone had entered his windpipe. Shortly after this he began bringing up large quantities of foul sputum, and sweated a good deal at night. In the last two months he had lost thirteen kilograms (two stone) in weight. He had been running a slight evening temperature of about 38° C. (100·4° F.). X ray examination of the chest revealed extensive fibrosis of the upper part of the left lung with bronchiectasis in the lower part. Dr. Lawton said that he intended to have a bronchoscopic examination made and to have further X ray investigation after the injection of "Lipiodol" into the trachea. He asked for suggestion with regard to treatment.

MR. BASIL KILVINGTON said that the cavity should be drained. He had operated on one patient with a fair result.

DR. D. J. THOMAS thought that before any line of treatment was adopted, X ray examination after the injection of "Lipiodol" should be carried out. In these cases there were usually changes in the other lung.

MR. ALAN NEWTON said that the surgical results in bronchiectasis, except in those cases in which only one cavity was present, were appalling. Resections were almost invariably fatal. The best results had been obtained by cauterizing the lung until the affected portion had been destroyed.

DR. S. V. SEWELL said that he had seen one patient on whom the cautery had been used with apparent success.

Recurrent Somnolence ? Encephalitis Lethargica.

DR. KONRAD HILLER showed a female patient, aged sixteen years. She had had infantile paralysis when eighteen months old and diphtheria when eight years of age. She was the eldest of eight children, the others all being alive and well. The family history was normal, except that her mother was very nervous. Three years ago she had received a blow on the right side of the head and one week later had a severe attack of diarrhœa lasting ten days, during which she passed much blood and slime. A week after this she had begun to get very drowsy, was constantly dropping off to sleep and was very difficult to arouse. She had been admitted to the Children's Hospital where a diagnosis of *encephalitis lethargica* had been made. During the following year she had been frequently admitted to the same hospital with drowsy attacks of varying severity. For the next twelve months she had been a good deal better and had attended school, although she was still sleepy at times and always went to bed at about four o'clock in the afternoon. About eighteen months previously she had commenced taking fits which were preceded by left-sided facial twitching and accompanied by frothing at the mouth and biting of the lip. Six months previously she had been admitted to the Melbourne Hospital in a deep sleep having been intermittently in this condition for a week. Two days prior to this she had had one of the fits already mentioned and had had a severe headache. On examination at this time no signs of an organic lesion, except those of the old infantile paralysis, had been found. The blood had not reacted to the Wassermann test. X ray examination of the skull had revealed no abnormality. The cerebro-spinal fluid had manifested nothing abnormal. The blood contained fifteen milli-

grammes of urea per hundred cubic centimetres. After a week in hospital she had become very restless and excitable and again lapsed into sleep for one day. The following day she had become quite bright again and remained so till her discharge nineteen days after admission. She had remained well until a month previously when she was admitted to the Warrigul Hospital in a drowsy condition. During the previous month she had had frequent drowsy attacks, lasting for a variable period ranging from one to thirty-six hours. Before each attack she had complained of weakness and drowsiness and had refused to take food. After the attacks she had been quite rational and had been so on admission to the Melbourne Hospital on October 4, 1926. Shortly after admission she had again become stuporose, but could with difficulty be aroused. The breath had smelt strongly of acetone and the urine contained a large quantity which soon disappeared on the administration of large quantities of carbohydrate. During the next ten days she had been intermittently drowsy, but she always brightened up when visitors came to see her. Two days previously she had become quite bright and had remained so. A complete neurological examination revealed nothing except the signs of the old infantile paralysis. The Casoni and complement fixation tests for hydatid had yielded no response. The *fundi oculi* were not abnormal. The cerebro-spinal fluid was normal. Both the blood and the cerebro-spinal fluid failed to react to the Wassermann test. Dr. Hiller asked whether *encephalitis lethargica* could account for this patient's illness.

DR. H. F. MAUDSLEY said that in most postencephalitic conditions signs of bradykinesis developed within twelve months and this patient showed no such signs. He had, however, seen one patient with rigidity in one limb only, whose condition had been regarded as functional for three years, but who had then developed a typical Parkinsonian syndrome. He did not think that *encephalitis lethargica* could be excluded in this case.

DR. LESLIE HURLEY said that in his opinion the condition was functional. An organic disease acting over a period of three years and causing such definite phenomena should have produced some neurological sign or some abnormality in the cerebro-spinal fluid.

DR. S. V. SEWELL said that he had seen a patient who had had about twenty attacks of drowsiness, one of them lasting for three days and the remained being spread over a period af three years. There had been no neurological signs and the attacks were relieved by lumbar puncture, which showed that the cerebro-spinal fluid was under increased pressure and contained an excess of globulin and lymphocytes. He had advised giving enemata of magnesium sulphate when an attack threatened; this had been successful in warding off further attacks.

Progressive Hemiplegia ? Secondary Brain Tumour.

Dr. Hiller's second patient was a female, aged fifty years. Twelve months previously she had had a "stroke" and was unconscious for a few minutes, but no paralysis followed. Five months previously she had suddenly noticed twitching of the right arm and right side of the face and then became unconscious for about five minutes. After this she dragged the right foot when walking and there was some weakness of the right upper limb which could not be used for finer movements. Following this at intervals of about one month there had been three short attacks of unconsciousness lasting about two minutes, after each of which there had been further loss of power in the right arm and leg. During the last month she had stuttered, had had some difficulty in recollecting correct words for speech and her memory had become faulty. Five days previously she had had another attack of unconsciousness lasting about five minutes and preceded by twitching of the right arm and face. After this the right upper and lower limbs were completely paralysed and remained so till her admission to hospital on September 29, 1926. There had been no headache nor vomiting. For the past few months there had been some urgency and frequency of micturition. The appetite had been good and there had been no shortness of breath. On examination there was a spastic paralysis of the right upper and lower limbs and some paresis of the right side of the face. On the same side the deep reflexes were increased, the superficial abdominal reflex was absent and the plantar reflex was extensor. The cranial nerves, with the exception of the facial, were intact. In the right lower limb there was some impairment to cotton wool touch and to pin prick and joint and muscle sense were defective. The cardiac apex was in the fifth intercostal space, ten centimetres (four inches) from the middle line. There was no right cardiac dulness. The first sound at the apex was reduplicated. The palpable arteries were thickened. The systolic blood pressure was 135 and the diastolic 80 millimetres of mercury. The urine had a specific gravity of 1012, was acid and contained a few pus cells, but no albumin or sugar. In the upper and outer quadrant of the right breast there was a hard tumour with indefinite outline and fixed to the skin. A small, hard gland could be felt in the right axilla. The left breast was also somewhat indurated. Mentally the patient was dull and had hallucinations of sight and hearing and delusions of persecution. The cerebro-spinal fluid was under slightly increased pressure, but was otherwise normal. The Casoni and complement fixation tests for hydatid had yielded no reactions. Both the blood and the cerebro-spinal fluid had failed to react to the Wassermann test. Ophthalmoscopic examination revealed some blurring of both discs, but no hæmorrhages or exudate. The blood contained twenty milligrammes of urea per hundred cubic centimetres. The urea concentration test gave a reading of 2·9%. X ray examination of the skull showed an area of absorption of the inner table in the middle line in the anterior parietal region. Dr. Hiller asked for an expression of opinion as to the nature of the tumour in the breast and as to whether the neurological phenomena were due to a secondary growth in the brain. He thought that the recent rapid progress must have been due to a hæmorrhage, as a tumour large enough to have produced such definite signs would have caused optic neuritis.

Dr. S. V. Sewell said that he had seen one case of carcinoma with numerous secondary deposits in the viscera and one secondary growth in the occipital lobe. He thought that the tumour was in the brain substance and not in the bone.

MR. BASIL KILVINGTON thought that the tumour in the breast was malignant and that the neurological phenomena were due to a secondary growth in the meninges. He thought that the patient's skull should be trephined, as there might be only one secondary growth present.

DR. DOUGLAS THOMAS said that it was rare to get secondary growths in the bones of the skull. The erosion of the bone was quite uniform and was therefore probably due to pressure from a tumour in the meninges or brain substance.

DR. R. P. MCMEEKIN said that he had seen one case with numerous secondary deposits in the brain substance, but with none in the bones.

MR. ALAN NEWTON had operated on a patient who had presented clinical and radiological evidence suggesting a tumour in the cerebello-pontine angle. There had been three secondary growths in the petrous portion of the temporal bone. The breast had been removed fifteen years previously. He thought that in the patient shown the breast tumour was malignant, more because of the gland in the axilla than from the physical signs in the breast itself. The secondary growth which he thought to be in the meninges, should be explored and if successfully removed, the breast should be dealt with at a later date.

Functional Spasm with Some Hypotonia.

DR. H. F. MAUDSLEY showed a female patient, aged twenty-one years, who had been thrown from a horse on to her left side twelve years previously, after which she had suddenly manifested a left-sided hemiplegia. This had rapidly improved, but the left upper limb remained spastic and flexed at the elbow and wrist. Three years previously she had undergone a cervical ramisection with the result that she was able to use her left arm and hand to a limited extent. When first seen a month previously, she had been able to use her left arm freely, but her left hand would go into a condition of tonic spasm which she appeared to be unable to control. On the left side the deep reflexes were increased and the superficial abdominal reflex was diminished. The right plantar reflex was flexor,

but the left was not obtained. There was slight spasticity of the left lower limb. With treatment by suggestion the spasm of the hand had improved, though it was still present when her attention was drawn to the limb. When she relaxed the left hand, there appeared to be more hypotonia on passive movement than in the right hand. Dr. Maudsley asked for an expression of opinion as to whether the condition was purely functional or whether there was some slight organic basis. He also asked if the ramisection had had merely a psychogenic effect or was there true hypotonia on the left side.

DR. S. V. SEWELL said that he was inclined to regard the condition as being functional, because there was no Babinski reflex and the patient, on being questioned, said that when she was reading the limb was quite still and there was no spasm. This did not happen in an organic spasticity. Ramisection in his experience had been of value only in functional cases.

DR. R. P. MCMEEKIN said that he had seen no benefit result from ramisection in patients with organic lesions.

MR. BASIL KILVINGTON also expressed the view that the condition was functional.

Trigeminal Neuralgia.

MR. BASIL KILVINGTON showed a male patient, aged sixty-five years, a tailor's presser. About four years previously he had begun to have frequent attacks of excruciating pain on the left side of the face, usually commencing in the region of the nostril and shooting into the cheek and lower jaw, but never to the forehead. All the teeth on the left side had been removed. In April, 1923, he had had injections of alcohol into the second and third divisions of the fifth nerve at their exit from the *foramen rotundum* and *ovale* respectively. This had given him relief for six months, after which the pain returned and could often be induced by touching the face especially about the nostril. In March, 1924, the lower two-thirds of the Gasserian ganglion had been removed, but the pain recurred three days after the operation, although it was not so severe as before. Eight months after the operation the pain was very severe below the left eye and on the left cheek and could be brought on by any movement of the face. In March, 1925, about five centimetres (two inches) of the infraorbital nerve had been removed and he had been free from pain until about six months previously, when he began to get sharp pain over the lower jaw and in the gums brought on by any sensory stimulus in this area. On examination at the time of presentation there was complete anæsthesia of the left side of the nose, tongue and cheek and partial anæsthesia over the mandible and in front of the left ear. Mr. Kilvington thought that the recurrence of the pain was due either to a lesion more central than the ganglion or to the presence of afferent fibres in the facial nerve. He had seen a case of bilateral *tic douloureux* in which one side had been involved twelve years before the other. He asked for suggestions with regard to treatment.

MR. ALAN NEWTON advised division of the sensory root of the ganglion. This had been successful in a patient in whom the pain had recurred some years after the removal of the ganglion.

DR. S. V. SEWELL said that in some cases ganglion cells extended centrally for some distance so that the pain might persist when the ganglion was removed. He agreed with Mr. Newton that the sensory root should be divided.

Cardio-Renal Disease.

DR. S. V. SEWELL showed a male patient, aged fifty-six years. The past history and family history were normal. He had been well and doing heavy work until twelve months previously. He then began to get fainting turns, with giddiness, but no actual loss of consciousness and had to give up his work. A few months previously he had begun to get short of breath and this had gradually increased, until he became dyspnœic on walking only a few yards. For the previous twelve months he had passed urine once during the night and during the last five months had had definite œdema of the ankles. On examination the cardiac apex had been in the sixth intercostal space twelve and a half centimetres (five inches) from the mid-line. There was a blowing systolic murmur at the apex and the aortic second sound was definitely accentuated. The palpable arteries were thickened. The systolic blood pressure was 210 and the diastolic 140 millimetres of mercury. There was prolongation of expiration and crepitations at both lung bases. The liver could be felt two fingers' breadth below the costal margin. There was gross œdema of the legs extending as far as the knees. The urine had a specific gravity of 1009, was acid and contained large amounts of albumin, but no casts. After admission the patient had had several attacks of nocturnal dyspnœa accompanied by præcordial pain and palpitation. When seen in one of these attacks the pulse rate had been 45 in the minute and on auscultation at the cardiac apex the beats were coupled, only every second beat reaching the wrist. "Theocin" 0·3 gramme (five grains) three times a day had first been administered, but there was no effect on the œdema. Injections of "Novasurol" (one cubic centimetre) had then been tried; this produced a good diuretic action, but the œdema was only slightly diminished. Urea and "Ouabain" had then been successively used, but the œdema gradually increased until it extended up to the level of the diaphragm. Injections of "Novarsurol" combined with the administration of urea by the mouth were then given and for a time there had been a good diuretic effect and the œdema was very much diminished. It had, however, returned again and at the time of presentation was very gross. Dr. Sewell asked for suggestions with regard to treatment.

DR. KONRAD HILLER said that he had seen a patient with a similar condition which had been improved by the administration of caffein citrate 0·3 of a gramme (five grains) given every four hours continuously for three days and combined with digitalis.

DR. I. MAXWELL said that he had seen definite improvement in cardio-renal œdema on the exhibition of caffein in 0·2 gramme (three grain) doses. A high protein diet, although it caused no great rise in the blood urea, acted as a diuretic in the same manner as the giving of urea.

DR. K. D. FAIRLEY suggested giving ammonium or calcium chloride by the mouth with at the same time injections of "Novarsurol."

DR. L. E. HURLEY said that he had seen a patient whose cardio-renal œdema had resisted the usual methods of treatment, but it had cleared up spontaneously during a period when no drugs were being administered. He commented on the difficulty of determining the effect of drugs in these cases, as the œdema was subject to great fluctuations.

Chronic Gingivitis.

DRS. DOUGLAS THOMAS and J. MONAHAN LEWIS showed a male patient, aged forty-two years, who had been employed in outdoor work. He complained of occasional attacks of diarrhœa, but otherwise felt well. He had been treated privately for six months for his mouth condition by means of various mouth washes without any improvement. On examination of the mouth there was considerable heaping up of the interdental gum tissue. The surface generally had a milky appearance and small, bright red areas alternated with denser milky patches. The gingival tissues were not definitely tender, nor did the bright areas bleed readily when touched even with a sharp instrument even though the appearances suggested that these areas were devoid of epithelium. The gum on the lingual aspect of both jaws was normal in appearance. When first seen eight weeks previously a reddish patch about three centimetres long and two centimetres wide had existed on the right side of the tongue in the region of the first lower molar tooth. In appearance it had closely resembled the areas occurring on the tongue in sprue. In the central portion the patch had been glazed and scarlet. Towards the margin this appearance had faded away and at the immediate edge there was a very slight heaping up of epithelium. This area had been considerably reduced in extent after a mouth wash of "Chinosol" was used by the patient. At the time of presentation the dorsum of the tongue had a bluish-white appearance, while just beneath the tongue edge on both sides and beneath the tip there were patches of thickened epithelium. This condition could also be seen on the floor of the mouth about the

openings of the submaxillary ducts. The mucous membrane of the cheeks shared in these appearances, except that patches and lines of leucoplakia, forming in some places a definite network, could be seen. The patches were most definite opposite the line of dental occlusion and near the corners of the mouth. Efforts which were made to detach portions of the epithelium from the gum and from the patches on the cheek, proved its great density and its firm adherence to the underlying tissue. Dr. Lewis pointed out that the dental condition was very interesting in view of the absence of any general disease to account for it. There was no anæmia, the serum yielded no response to the Wassermann test and the diet had been very generous. There could be no question of vitamin deficiency. A fractional gastric analysis had not been made and it would be interesting to know whether there was any deficiency of gastric hydrochloric acid in view of his occasional diarrhœa. The condition was being further investigated from the pathological and bacteriological standpoint at the Walter and Eliza Hall Institute. He regarded the mouth condition as a distinct dental entity and as the primary lesion.

MACDONALD PRESENTATION FUND.

THE following subscriptions to the Macdonald Presentation Fund have been received since last week.

	£	s.	d.
Dr. Watson Munro	4	4	0
R. G. O. Harris, Esquire (Med. VI.)	2	14	0
Dr. T. Ewing	2	2	0
Dr. N. M. Gibson	2	2	0
Dr. E. Marjory Little (second subscription)	2	2	0
Dr. Suzane Abramovitch	1	1	0
Dr. C. H. Armitage	1	1	0
Dr. C. Bickerton Blackburn	1	1	0
Dr. G. C. Curtis	1	1	0
Dr. Wilfred Evans	1	1	0
Dr. E. F. Fisher	1	1	0
Dr. Sydney George	1	1	0
Dr. R. V. Graham	1	1	0
Dr. M. Hiatt	1	1	0
Dr. T. E. Y. Holcombe	1	1	0
Dr. L. H. Hughes	1	1	0
Dr. S. G. Iceton	1	1	0
Dr. John Leah	1	1	0
Dr. R. K. Lee-Brown	1	1	0
W. Little, Esquire	1	1	0
Dr. C. J. Logan	1	1	0
Dr. Derby Loudon	1	1	0
Drs. I. M. and M. J. MacKerras	1	1	0
Dr. Mona M. Nelson	1	1	0
Dr. George Norrie	1	1	0
Dr. Reg. E. Nowland	1	1	0
Dr. S. M. O'Riordan	1	1	0
Dr. R. G. J. Pittar	1	1	0
Dr. W. F. Simmons	1	1	0
Dr. R. J. Taylor	1	1	0
Andrew Thom, Esquire	1	1	0
Dr. E. A. Tivey	1	1	0
Dr. D. G. Vickery	1	1	0
Dr. W. L. Vickery	1	1	0
Dr. A. S. Walker	1	1	0
Dr. Keith Whiting	1	1	0
E. Jones, Esquire	1	0	0
Dr. Hodgkinson	0	11	0
Dr. J. M. Barrow	0	10	6
Mrs. J. A. Chew	0	10	6
T. J. Chew, Esquire	0	10	6
Dr. L. Fetherston	0	10	6
Dr. H. G. Howell	0	10	6
Dr. Linda Magee	0	10	6
Dr. Elma Sanford	0	10	6
Dr. D. J. M. Saxby	0	10	6
Dr. C. W. Sinclair	0	10	6
Mrs. L. Stead	0	10	6
Dr. H. J. Wilkinson	0	10	6
F. S. Cotton, Esquire	0	10	0
Dr. Louis J. Horn	0	10	0
Dr. W. F. Liggins	0	10	0
Sums under ten shillings	0	14	0
Amount previously acknowledged	34	13	0
Total	£89	18	6

As the presentation will be made by Professor D. A. Welsh, Dean of the Faculty of Medicine of the University of Sydney, in the Pathology Department Lecture Theatre, Medical School, on Thursday, March 24, at 2 p.m., intending subscribers are requested to forward amounts as soon as possible.

Obituary.

LESLIE JOHN SCOTT.

MUCH sympathy has been felt for the widow of the late Dr. Leslie John Scott whose death was reported in a recent issue of the journal. While engaged in active practice he was seized with lobar pneumonia and was not able to withstand the severity of the infection.

Born in 1897 and the son of Mr. T. Scott, J.P., of Annandale, Sydney, Leslie John Scott was educated at Fort Street High School. He studied medicine at the University of Sydney. After qualification he became resident medical officer in turn at Rydalmere Mental Hospital, Parramatta and Gladesville Mental Hospitals and finally at the Mater Misericordiæ Hospital, North Sydney. After leaving the last institution he took up practice at Hillston, New South Wales, and remained there for eighteen months. He then acquired the practice of Dr. C. U. Carruthers on the latter's retirement from Balmain. Here he practised assiduously and quietly until overtaken by what proved to be his final illness. At the time of his death he was Honorary Assistant Surgeon to the Balmain and District Hospital.

War broke out while Leslie John Scott was a student of medicine. He volunteered for active service abroad, but the authorities sent him back to the Medical School with many others to finish his course. The armistice was signed just before he qualified and his wish to serve his country in the field could not be gratified. Leslie John Scott was a man who got on well with his fellows and commanded their respect. He will be missed from the community which he served.

Correspondence.

LEPROSY.

SIR: My thanks are due to Dr. Cooke for having voiced the objections of a supporter of segregation to the conclusions of my leprosy paper published in your journal of September 18, 1926, not only because he keeps the subject open to discussion, but because he states his case in such a kindly fashion.

But he is wrong in the very beginning in ascribing to me a doctrine "that racial immunity is a sufficient safeguard against leprosy to a British community" and in stating that my arguments in support of this doctrine "are fundamentally unsound," though he finds it difficult to answer them without discrediting my work which he is kind enough to describe as valuable.

First I nowhere put forward such a doctrine and herewith disown it. But in fact in my original paper I took pains to say, in order to avoid misinterpretation: "That notification and the fullest facilities for treatment, regular inspection of patients and review of the means of treatment adopted and its results, the provision of hospital accommodation for indigent and ignorant patients and those who desire it or who have open and acutely infective lesions, should be maintained, I heartily agree" (page 370). And "Let us start afresh and originate a clean, unprejudiced and rational *régime* for the management of the problem of leprosy and let our humanity extend liberally to the unfortunate lepers, at any rate to those who are willing and able by reason of their intelligence and educa-

tion to follow out treatment and to avoid any reasonable risk of infecting their fellows" (page 378).

Secondly if my arguments in support of a vital part of my doctrine are in Dr. Cooke's opinion unsound, then it is his bounden duty to attack them without respect for my feelings, since a paper in which conclusions are based upon arguments that are "fundamentally unsound" cannot possibly be valuable, but must on the contrary be dangerous and intolerable and should be given scant courtesy and short shrift.

Once more he is wrong in stating that I conclude that leprosy does not constitute a menace to the European population of Australia. I only stated that this menace has been grossly over estimated and that in consequence of the exaggerated fear which has been engendered in the minds of the public by the supporters of the segregation policy, almost incredibly severe measures have been taken in dealing with revealed cases of leprosy, as compared with those taken in the case of tuberculosis, syphilis, sewerage deficiencies, lack of milk control and a hundred and one other sources of greater danger.

A fourth time he is wrong in objecting to the resurrection of arguments comparing the risks run by the community from leprosy with those from other sources such as mentioned above. Such comparisons are very necessary to bring back to the popular and official mind a true perspective so essential to a proper handling of cognate problems. Failure on our part to gain the necessary prespective by comparison with other menaces cannot fail to excite wonder in the mind of posterity and will be regarded with superior amusement by our scientific successors.

Nor am I impressed with the statement that we would not be justified in "permitting the unlimited dissemination of yet another plague more particularly when we know this one can be readily controlled."

As I said above, such supineness was never advocated by me. But this sentence lets the prejudice in favour of segregation come to light and shows that still in Dr. Cooke's mind there remains the conviction that segregation has been responsible for the decline of leprosy in Eurorpe and is responsible for the negligible amount of disease which exists among Europeans today.

To combat that misconception was the main object of my paper and though I am flattered that I have wrung from a segregationist an admission that "the elimination of the susceptible is a real factor in the production of racial immunity" I despair of overcoming a prejudice which fairly bristles in the expression that leprosy can be so readily controlled (by segregation). My main contention which Dr. Cooke partly but grudgingly admits, was that segregation had been credited wrongly with the decline of leprosy among Europeans.

The examples given by Dr. Cooke of the survival of leprosy in isolated communities, in Russia and elsewhere, so far from disproving my theory are merely repetitions of examples given in my original article that peoples who have not yet served their thousand years or so in the purgatory of leprosy, have to suffer their full period of purification. The temperature of the fire may be tempered by efforts at control. A flat is now apparent in Norway and it may be argued that this is brought about by segregation. But even if it be so, what ultimate advantage is gained, if the law of evolution makes it certain that the formula "Degree of Temperature × Years" shall remain constant.

In the paper I pointed out that the cases of India and China were not quite the same as that of Europe, but I should like to remind Dr. Cooke and other readers of my suggestion that the temporary protection afforded by caste, religion and nationality, was probably responsible for the survival of susceptible stock in the inhabitants of these countries, just as segregation, if it were able to achieve its object, would preserve susceptible stock among ourselves.

Segregation, however, will not be able to achieve its objects, for we must all admit, whether we will or not, that the law of evolution is immutable and that our efforts to combat it are as effective as those of the ant who was jostled by the elephant in the doorway of the Ark.

The fact remains that in spite of the severest regulations in existence for the control of leprosy throughout the whole world, Queensland and North Australia continue to supply a huge proportion of the total number of cases of this disease which occur in Australia. The only other State which counts is New South Wales where the regulations do not operate nearly so severely as in Queensland. For example I have personal knowledge that a patient is not detained in the lazaret in New South Wales for two years after the disappearance of lesions and bacilli. Yet, in spite of milder regulations, New South Wales, as Dr. Cooke states, breeds very few of the cases which it interns at Little Bay. A number are Asiatics, others come from northern parts of Australia, some are imported and the residue come from the North Coast of New South Wales in close priximity to Queensland.

The factors that determine this state of affairs are of course (1) that a tropical climate has a powerful influence in reducing the resistance of Europeans and (2) that the more frequent exposure of Europeans to a virulent infection from susceptible races, such as Australian aboriginals and Asiatics, succeeds in finding the occasional throw back or in overcoming the resistance of the European. For nobody would dream of regarding the resistance of Europeans as absolute.

But I fail to see that the continued existence of leprosy in Queensland can be logically advanced as an argument in favour of segregation seeing that the regulations of that State against leprosy are admittedly the most severe in the Commonwealth, if not in the world, while the incidence amongst whites in the State remains five-sixths of the total incidence among whites in the whole of Australia.

Rather, as the Editor has remarked, must we conclude that "Segregation has been tried and found wanting." Rather must we devise and put into operation other and efficient means of combating what Dr. Cooke insists and the rest of us admit is a real (though not very serious) menace to Europeans living in Australia north of the latitude of Newcastle.

The truth is that Dr. Cooke is so imbued with the idea that segregation is efficacious that he fears that any attack upon this method is a negation of the value of prophylaxis in general and it is just at this point that I part from him and desire the adoption of better and at the same time more humane and more far-reaching methods of control.

Dr. Cooke, under the influence of his belief in segregation, makes no reference to the elevation of virulence which the leprosy bacillus undergoes by passage through a member of a susceptible race and says not a word and entirely neglects in his argument what must be the source of the infection of the sporadic cases which occur in New South Wales, in Queensland, in Norway and elsewhere, namely the undiscovered, self-healing and concealed cases of leprosy. The existence of such cases was proved by Dr. Taylor as related in my paper, was instanced among my own cases and must be admitted even by the most ardent segregationist in explanation of the occurrence of such sporadic cases of revealed leprosy as undoubtedly occur. And segregation, so far from relieving the situation with regard to this source of infection so obviously in operation, simply aggravates the risk by inducing concealment of cases which might otherwise be brought forward and obtain adequate treatment. And the more rigorous and severe the regulations are made, the worse will this situation become. Hence arises my plea for a system which will favour admission of the possibility of the existence of the disease, hasten the diagnosis of it and render possible treatment of it in the early stages when the chances of cure are of the best.

Even of those cases ultimately discovered and interned the great majority have had the disease for years and segregation of sufferers when discovered is only removing a part of the risk to the community.

What I have preached is the concentration upon efficient notification, efficient treatment and humane regulation of leprosy without any intolerable interference with the liberty of the individual especially of one who is the victim of a disease the infliction of which is a lot sufficiently hard to tax the tolerance of any civilized being.

It is not, as Dr. Cooke would have us believe, the nausea *et cetera* that induces sufferers to decline treatment, so much as plain despair, a mental effect produced by internment in a lazaret. Of this I have personal knowledge from released patients who have consulted me with reference to the continuation of treatment after release.

It is not as if treatment were not hopeful, especially when early or rather only moderately advanced cases are concerned. Leprosy is far more amenable to treatment than is pulmonary tuberculosis, as can be seen even in the statistics of lazarets where the patients are nearly all of susceptible race.

I am sorry, but I cannot let pass the attempt which Dr. Cooke makes (involuntarily I am sure and as a result of his belief in the efficacy of segregation by internment) to cloud the issue by suggesting that my observation of the mildness of the disease as noted in the patients at Little Bay, is not a true representation of the state of the majority of European lepers generally. Even in the case of lepers coming from a susceptible race the writer of the article in the Sydney *Bulletin* quoted by me expresses surprise at the mildness of the manifestations of the disease. It is not to be borne that the old terror of leprosy should again be aroused (even without malice aforethought) in order to prop the foundations of the method of attempting to control leprosy by internment.

The mere statement that "prophylaxis" (by which segregation alone appears to be meant) "against leprosy has been proved successful time and time again in Australia" cannot be accepted without supporting facts read in the light of our knowledge of racial insusceptibility. "The cessation of effort in this direction" (internment) need not by any means result in "national calamity" any more than it does in Britain and the British throughout the world, especially if effort were concentrated in the more promising direction of notification, early treatment supported by humane regulations against conveyance of infection which would not induce the patient to conceal the disease, nor the practitioner to fail to clinch his diagnosis by the discovery of bacilli.

Taking the question of cost for example, I am informed that it costs the Government of New South Wales £500 *per annum* to maintain a patient in the lazaret and I do not suppose it costs any less in Queensland.

Surely for much less than £500 per patient an adequate system of notification, treatment and precaution against infection could be devised and administered. The contention that a trained nurse is required for the treatment of a leper outside the lazaret is to my mind a counsel of perfection. If, as is often the case, a patient when discovered has been married for years and has not in the period before discovery infected his wife, it is fair to presume that she is relatively immune to an extent which will render it justifiable to allow her to continue to attend to him with due precautions which were lacking before discovery. The danger of spreading the disease by contact, by washing of clothes or the use of contaminated eating utensils can be minimized by the adoption of reasonable precautions and the assumption of the residual risk is much more easily justified than is the deprivation of the liberty of the unfortunate sufferer from the disease. The essential part of prophylaxis should be the prevention of personal contact or performance of any household duties for a leper by children or adolescents.

No! Queensland's problem is not, it seems to me, to be solved by the internment of white lepers but the solution depends:

1. Upon the betterment of conditions dependent on the influence of a tropical or subtropical climate on Europeans. This will no doubt be attempted along ordinary political lines.

2. The prevention of contact on the part of whites whose resistance may be lowered by climatic conditions, with aboriginals or Asiatics who by reason of their susceptibility may convey an infection of raised virulence. All such aboriginals or Asiatics who come into contact with or live in the proximity of Europeans, should be compelled to report for inspection regularly.

3. Hospital accommodation in an institution not branded as a lazaret or leprosarium or any such suggestive designation must be provided for severe cases in Europeans or for those who by force of circumstances are compelled to seek the shelter of such a hospital.

4. As a disciplinary measure to coerce such patients who evade or refuse treatment or who neglect statutory precautions against conveying infection to others, especially to children and adolescents, commitment to the old lazaret might be resorted to. The deterrent effect of such a measure would be great and its selective operation would be justified.

5. The management of the aboriginal, half-caste or Asiatic sufferers presents the greatest difficulties. The Asiatics might and should be repatriated. But I am informed that the escape of aboriginals cannot be adequately guarded against, that by boat or swimming even through shark infested waters, they will make the mainland and "go bush." It is probable that such aboriginals and the Asiatics in Queensland provide the means of infection and one of raised virulence at that, which accounts largely for Queensland's overwhelming proportion of the known lepers of Australia.

The control of this aboriginal side of the problem may be impossible or impracticable, but if it be so, then it is beating the air to intern the European sufferers who are presumably mentally equipped to an extent that will enable them to avoid contaminating others.

In view of the statements of Dr. Cooke and of the Federal Health Authorities it is more than probable that the infection of aboriginals through contact with Asiatics and the employment of aboriginals for domestic or other service by Europeans is the principal source of infection of the latter, and if this be true, it must be admitted that the internment of Europeans infected is merely treating the effect, while leaving the cause unchecked.

With the rapid dying out of the aboriginals as a result of infection with tuberculosis, syphilis and other diseases and as the line of settlement advances, this problem will probably solve itself in the not very distant future and then the credit of the disappearance of leprosy will perhaps again be given to segregation and another indubitable instance of the beneficial effect of segregation be published to the world.

To sum up therefore and in spite of protests against the use of comparison with other diseases, I am going to put forward first what everybody must admit, and later repeat what may not be universally admitted.

In Group A:

1. Leprosy is a disease to which Europeans show a much greater resistance than they do to tuberculosis.

2. Leprosy is a disease which when contracted, is much more amenable to treatment than is tuberculosis and even in fatal cases it is much slower on the average in bringing about the death of the patient than is the case with the latter disease.

3. That leprosy is far less horrible in its effect, causes less maiming and disability than does syphilis. If in its early stages it is less amenable to treatment than is syphilis, in the later stages syphilis probably is the more intractable.

4. That the damage to a community of Europeans resulting from leprosy is infinitesimal as compared with that done with either, not to speak of both the abovementioned diseases.

5. That therefore the only justification of the severity which characterizes the efforts to control leprosy by internment is the horror which the disease inspires in the public mind.

In Group B:

6. That this public horror of leprosy is a survival of an old race memory, the result of the instillation of old-time conceptions of the disease and is not justified by facts to be gained by observation of its course in Europeans today.

7. That even if we admit that segregation produced the decline in the incidence of leprosy which undoubtedly occurred in Europe, we must confess that segregation as practised then was very crude in form and could operate only in a very incomplete fashion. Hence it would seem that if we admit that such means as those adopted by

Mediæval Europe produced the practical disappearance of the disease, we should be reasonable in expecting that regulations even milder should suffice to finally eradicate it. But on the contrary, even allowing segregation the whole credit for modern events, it only keeps the disease in check.

8. Modern methods of segregation doing no more than they do and ancient methods in this direction being no longer credited with causing the whole or even the major portion of the decline of leprosy in Europe, it is wise to realize that segregation as a means of controlling modern leprosy in European communities is a broken reed. And when in addition the enforcement of the method of internment inflicts grave disabilities upon unfortunate sufferers from the disease without conferring commensurate benefits to the community, it is time to think of other methods which may perhaps be more effective, and which at any rate will not burden the sufferers with more hardship than is inflicted by fate. It is only just to remove such restrictions to the liberty of such individuals, measures which were conceived in the erroneous belief that segregation was responsible for the rarity of leprosy in Europeans today.

9. Internment cannot possibly do much, if it does anything, for the reason that it can only operate very partially by eliminating such sources of infection as become obvious and misses the carrier and by its severity induces concealment.

10. The majority of aboriginal lepers cannot be found, caught nor kept, so even if segregation were effective elsewhere, it is not to be expected to succeed in northern Australia.

The more we think upon this subject, provided we keep ourselves free from prejudice, the more I feel sure will we become convinced of the futility and injustice of the methods of segregation as practised in the case of Europeans in Australia. If we fear leprosy as a modern menace we should adopt methods that have not been conceived in error, nor been found wanting in practice. If these methods fail in turn we can leave it to our successors to devise others, but I venture to prophecy that if leprosy still persists among Europeans in a hundred years time (and I feel sure it will), segregation, at least as it is practised today in Australia, will be as extinct as the Dodo and as little regretted.

But prejudices die hard and the last defence of them is the most stubborn, so it is not reasonable to expect, though it is pleasant to hope, that the end will come just yet.

One error I wish to admit and that is that in my original article I stated that as in England and France, no special measures were taken to control leprosy in the United States. I qualified my statement with respect to the United States by inserting in brackets "subject to correction and control." This correction was promptly forwarded to me by the Health Department of the United States and I wish to thank the Director of that body for his kindness in informing me of the true state of affairs.

Yours, etc.,

E. H. Molesworth.

235, Macquarie Street, Sydney.
Undated.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xxii.

Austin Hospital, Heidelberg, Victoria: (1) Junior Resident Medical Officer; (2) Resident Medical Superintendent.

City of Melbourne: Medical Officer of Health.

Melbourne Hospital: (1) Locum Tenens for Out-Patient Physician; (2) Locum Tenens for Out-Patient Surgeon.

Renwick Hospital for Infants, Summer Hill, Sydney: Resident Medical Officer.

St. George District Hospital, Kogarah, N.S.W.: (1) Honorary Consulting Physician; (2) Honorary Orthopædic Surgeon.

Women's Hospital, Crown Street, Sydney: Resident Medical Officer.

Medical Appointments: Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
New South Wales: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
South Australian: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia. Yarloop Hospital Fund.
New Zealand (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Mar. 15.—Tasmanian Branch, B.M.A.: Council.
Mar. 15.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Mar. 16.—Western Australian Branch, B.M.A.: Branch.
Mar. 21.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Mar. 22.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Mar. 23.—Victorian Branch, B.M.A.: Council.
Mar. 25.—Queensland Branch, B.M.A.: Council.
Mar. 29.—New South Wales Branch, B.M.A.: Council (Quarterly).
Mar. 31.—New South Wales Branch, B.M.A.: Branch (Annual).
Mar. 31.—Queensland Branch, B.M.A.: Branch.

Editorial Notices.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to The Medical Journal of Australia alone, unless the contrary be stated.

All communications should be addressed to "The Editor," The Medical Journal of Australia, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

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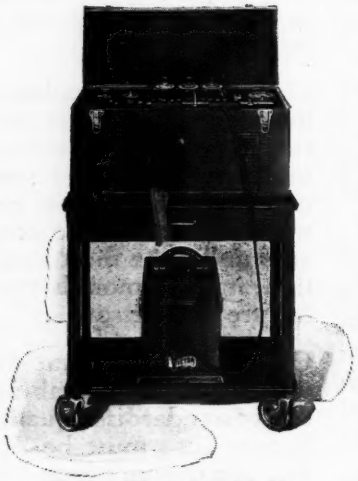

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Not dependent on electric "line" supply—is energized by its own storage battery and dry cells.

Compactness solves space problems—occupies floor space 28 x 12 inches.

ALL of the above advantages are incorporated in an instrument that is portable, so as to be conveniently taken to the patient's home, or from one hospital to another, without danger of damaging working parts.

Furthermore, these advantages and conveniences are realized without any sacrifice whatsoever in sensitivity, for the results obtained are at least the equivalent of those possible with any other electrocardiograph, regardless of make, design or size.

Thus research has developed an instrument that is destined to augment cardiology in all its phases.

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